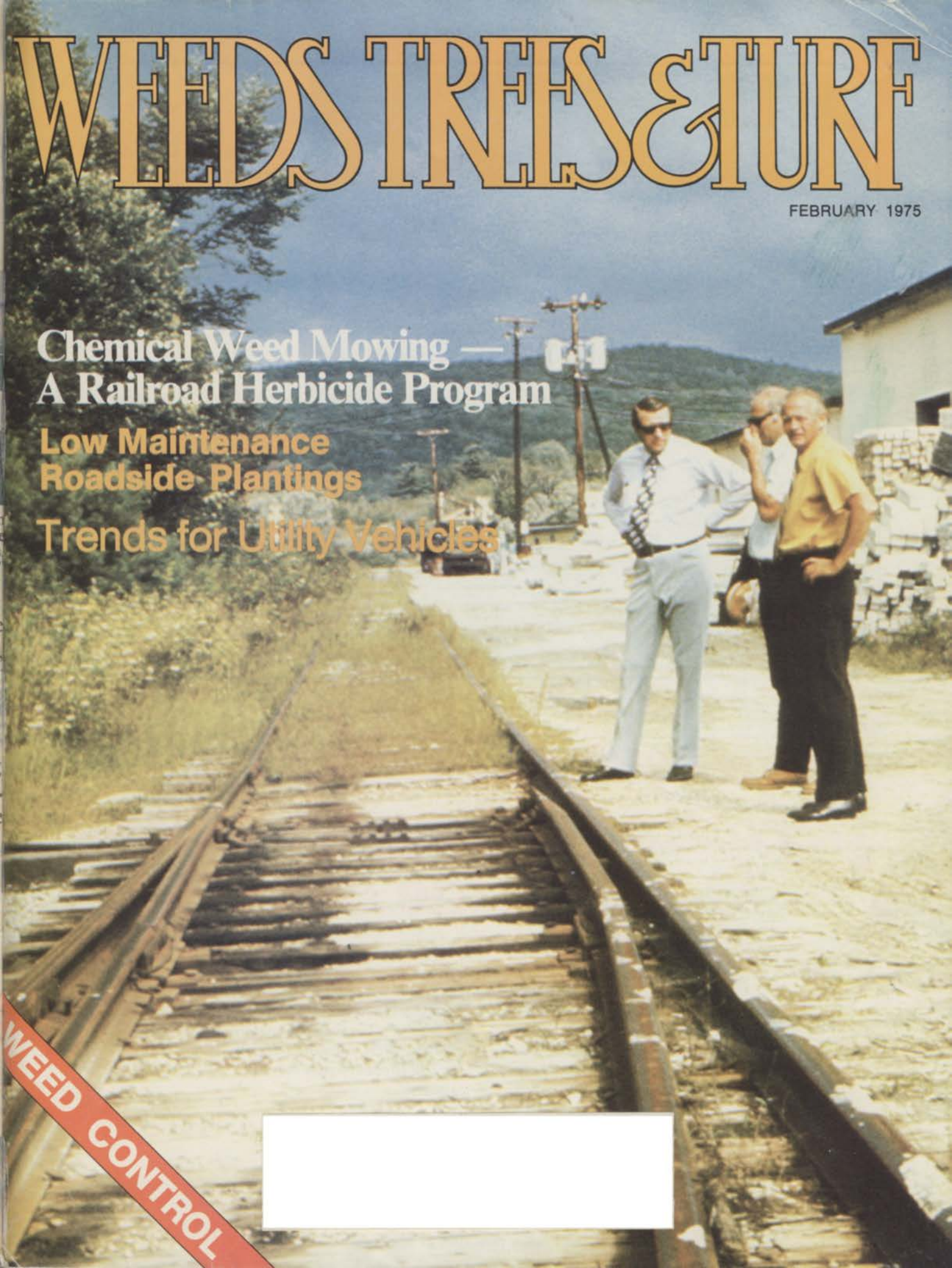
WEEDS TREES & TURF

FEBRUARY 1975



Chemical Weed Mowing — A Railroad Herbicide Program

Low Maintenance Roadside Plantings

Trends for Utility Vehicles

WEED CONTROL

This entire area was seeded with bluegrass and crabgrass. The left-hand side was sprayed with TUPERSAN the same day it was seeded. Note crabgrass on the right (untreated area) and the absence of crabgrass in the treated area.

The same areas thirty days after seeding and treating. TUPERSAN made the difference. Note crabgrass growth in the untreated area at right and how TUPERSAN controlled crabgrass in the treated area at the left.

Tupersan® crabgrass killer permits seeding & treating the same day (COOL-SEASON GRASSES)

Siduron Weed Killer

Du Pont TUPERSAN is a unique, highly selective, pre-emergence weed killer for the control of crabgrass (smooth and hairy) and certain other annual weed grasses in turf. TUPERSAN offers a high degree of safety to turf. It can be used on newly seeded areas without causing injury to germinating seeds of cool-season grasses. It can also be used safely on established turf.

You can seed and treat the same day with TUPERSAN. It prevents crabgrass—but lets the desirable grass grow. For full information on TUPERSAN, consult your golf course supplier—your service agency.

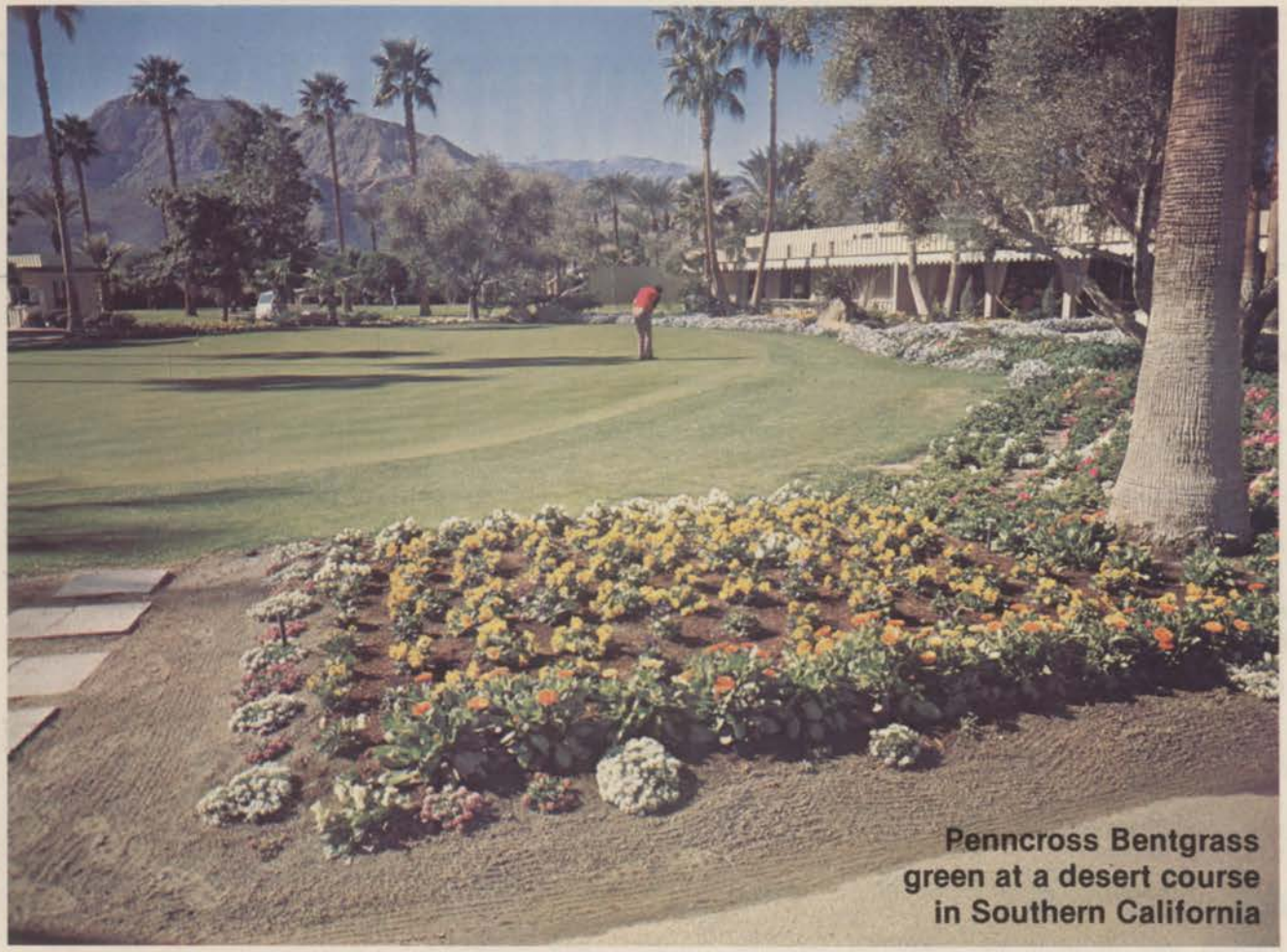
With any chemical, follow labeling instructions and warnings carefully.

DU PONT

REG. U.S. PAT. OFF.

For More Details Circle (129) on Reply Card

When the HEAT'S on



Penncross Bentgrass green at a desert course in Southern California

PENNCROSS can take it

CREEPING BENTGRASS

THE PROOF IS IN THE PUTTING

- Today's most popular, widely adapted variety
- More genetically uniform and poa-free seed
- Germinates fast, establishes quicker, thicker
- Superbly consistent, less grain for true putts
- Greens up earlier, hold summer color better
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PENNCROSS BENT GRASS

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"Penncross Greens putt true & their even texture gives me confidence in putting."

Patrick C. Fitzsimons

Pat Fitzsimons tied the world record score of 58 on a 6,000 yard course and is now a touring professional.

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WEEDS TREES & TURF

February 1975, Vol. 14, No. 2

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56 **Four Ways to Fight Inflation** — James A. Fischer of the Toro Company examines the present economic atmosphere and proposes a few solutions through more effective business management.

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Member, American Business Press, Business Publications Audit ABP BPA

Single Copy Price: $1.00 for current and all back issues. Foreign $1.50. Subscription Rates: WEEDS TREES AND TURF is mailed free, within the U.S. and possessions and Canada, to qualified persons engaged in the vegetation care industry and related fields in controlled circulation categories. Non-qualified subscriptions in the U.S. and Canada are $10.00 per year; other countries, $12.00 per year. Controlled circulation postage paid at Cleveland, Ohio 44101.

THE COVER — Railroad personnel examine trackside vegetation control program. The foreground has been chemically treated and is virtually weed free. The background is an excellent example of noxious weed take-over.

PUBLISHED MONTHLY BY
THE HARVEST PUBLISHING CO.
9800 Detroit Ave.
Cleveland, Ohio 44102
(216) 651-5500

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IBDU is different. Unlike other slow release fertilizers, IBDU has only a small percentage of immediately available nitrogen. You get an even, controlled growth instead of a rapid flush of growth.

Also, IBDU is activated by water, not temperature. It releases at a steady rate, hot or cold, rain or shine. So every sunny day doesn't send you running for the mower shed.

For up to 7 months IBDU gives you well-fed turf that's never overfed. It stays extra green without extra growth.

IBDU makes your grass grow greener, slower, longer.

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WTT-2

editorial

Now that we have our feet well-planted into 1975 it might be a good time to take a look at what the next 10 months have in store for the Green Industry businessman.

While what many economic experts are predicting as the worst U.S. recession since the Depression is taking its toll among even the strongest businesses, inflation and unemployment are accumulating at either end of the economic spectrum.

The inflation rate climbed to a new peak of nearly 13 percent last quarter, closely following last year's agricultural failures and the preliminary price testing as price controls expired. Analysts predict the unemployment rate will hit 8 percent before topping out.

Experts continue to forecast business activity at its lowest ebb before spring and then picking-up considerably during the summer and fall months. Business should be back to near-normal and rising by 1976.

But what do we as Green Industry businessmen do in the meantime to lessen these effects? What appears to be the most popular strategy is to cut back, sit tight and try to hold on to remaining accounts. That's no solution. We didn't get into this business because we were pessimists. We aren't successful because of defensive actions. And we certainly won't improve our lot by boning-up on the rules for tax treatment of losses.

Business is an opportunistic proposition. We have to continue the practices that made business successful and not sit on our heels waiting for the situation to ease.

James A. Fischer, director of marketing for the turf products of Toro, has an excellent article on this subject on page 56. He suggests becoming a better business manager by more efficient allocation of resource inputs for production of useful outputs.

Now our individual style and methods of management are uniquely our own, but the key is action — actively pursuing business as if business were going to continue on tomorrow. And it will. So why just react to the situation? Take control of the situation, replace that needed equipment, advertise your products or service and keep an optimistic outlook. REY

THE WORK HORSE OF HERBICIDES

CLEARY'S

MCPP

For selective control of chickweed, knotweed and clover on Bentgrass greens and fairways, Bluegrass and Fescues.

MCPP-2.4-D

Controls chickweed, knotweed, dock, dandelion, plantain, ragweed, purslane, pigweed, etc.

METHAR 80

An extra high concentrate of Disodium Methane Arsonate Hexahydrate to control Dallisgrass and crabgrass. Completely water soluble.

METHAR 30

A high concentrate liquid equivalent to 30% Disodium Methane Arsonate Hexahydrate. A super crabgrass killer.

AMA PLUS 2.4-D

For the control of Dallisgrass, Silver Crabgrass, plantain, dandelion, knotweed, chickweed and other broadleaf weeds.

AMA (SUPER METHAR)

Amine Methylarsonate, liquid for Crabgrass and Dallisgrass control.

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"The Company that's going places"
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For More Details Circle (103) on Reply Card

For More Details On Preceding Page Circle (112) On Reply Card

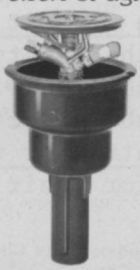
But what if it doesn't rain?

Rainclouds. Beautiful. Unpredictable. And hardly ever there when you really need them.

And then there's Rain Bird. Rain Bird sprinkler heads, valves, controllers and accessories that are in the full-time business of supplying water—where and when you want it.

Since we invented the impact sprinkler over forty years ago, it should come as no surprise *we make more sprinkler system components than anyone else.* For agriculture. For golf courses. For parks and gardens and residential lawns.

Everyone talks about the weather. We help you do something about it. We put rain under your control. To keep things green and growing.



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SPRINKLERS
Glendora, California 91740

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Government News / Business

Minimum wage scale effective January 1, 1975 is: Agricultural employees - $1.80; Non-agricultural employees covered before 1966 amendments - $2.10; Non-agricultural employees first covered by 1966 and 1974 amendments - $2.00.

Monsanto Company's former Agricultural Division reorganized to form Monsanto Agricultural Products Company. Edmond S. Bauer, newly elected corporate group vice president, said the change in organizational designation "strengthens our ability to more effectively meet market needs, consistant with growth and profit objectives..." Bauer added, "In the long run, we expect greater benefits will accrue to our customers and employees, as well as the shareowners of Monsanto."

Pacific Supply Cooperative, Portland, Oregon, was recently fined $300 for violating labeling requirements of the Federal Seed Act. Details of the case involved two shipments of annual ryegrass seed into Arkansas and Virginia. Both shipments were found to be falsely and incompletely labeled as to the presence of noxious weed seeds. The two states cooperated with the Agricultural Marketing Service in making the investigation.

Interstate Commerce Commission voted to make permanent a 4 percent interim freight rate increase authorized for most of the nation's railroads earlier this year.

Walbro Corporation, Cass City, Michigan, recently announced the acquisition of Auburn Die Casting Corp., Auburn, Michigan. The merger brings together two leading suppliers of the chain saw industry. Walbro manufactures chain saw carburators and Auburn produces die castings for Beaird-Poulan, Campbell-Hausfeld, Homelite and Roper.

Congressional pressure has resulted in a consultation program for on-site job safety and health help for small businesses. The program is expected to be approved by OSHA. Only states where federal job safety and health rules are enforced by OSHA will be eligible for the program. There will, however, be no citations issued for any alleged violations found and no penalties proposed.

American Association of Community and Junior Colleges, working under OSHA contract, has selected 20 junior colleges to participate in an experimental training program aimed primarily at small employers. Running through June, each college will conduct 8-hour or 12-hour courses on OSHA and its standards.

U. S. Fourth Circuit Court of Appeals ruled that a general contractor is not responsible for the safety of his subcontractor's employees. The decision came in a complicated case involving a fatal accident, for which OSHA cited the contractor as well as the subcontractor for serious violations of its standards. The court held that the contractor is not an "employer" of the dead workers and therefore not responsible for their safety.

A burst of brilliance...
Fylking for the World's Fair!

Fylking Kentucky bluegrass is a superior, elite bluegrass that burst like a star on the scene in the sixties!

Since then Fylking has established records making it the perfect choice for the official grass at the environmental World's Fair, Expo '74.

Fylking has proven to have superior resistance to disease and drought; withstands traffic. Its thickly woven rhizome root system develops dense sod so quickly Fylking can be lifted in 90 days. Fylking can be mowed at 3/4 inch (even 1/2 inch) and thrive. It absorbs carbon dioxide pollutants, gives off oxygen, cools air by releasing water vapor.

A superior mixer, Fylking greens up earlier in spring, stays greener in summer heat, remains green longer into fall.

Choose Fylking and your customers are getting a grass good enough for a World's Fair!

FYLKING KENTUCKY BLUEGRASS

U. S. Plant Patent 2887

Another fine product of Jacklin Seed Company

Fylking's rhizome root system develops so thickly, under ideal conditions sod can be lifted in 90 DAYS.

Low growth, short leaf sheaths and abundant tillering of Fylking (right) compared with another elite bluegrass plant.

Cross section displays thick, luxuriant turf, fine leaf texture and brilliant green color of Fylking.

For More Details Circle (121) on Reply Card

Give crabgrass

**(Like 2 feet in 10 weeks.
It'll also produce 3,000 seeds
to grow on you next time.
Balan® nips all this in the bud.)**

a chance and it'll grow on you.

One of Elanco's dependable weed-control crew

Untreated, there'll be a bigger crop next time, make no mistake. With your fertilizing and watering, crabgrass plants become fully-equipped seed factories in ten weeks.

Balan puts crabgrass out of business. Other annual weedgrasses, as well. A pre-emergence weed killer, Balan forms its protective zone where seeds germinate. Kills 'em, despite heavy rains and irrigations.

Works economically even on big areas. Costs $17 to $33 an acre. (Certain warm-season areas require two applications at a heavier rate for year-around control.)

Balan is convenient, too — granules are easily applied with your equipment. Make Balan's crabgrass control a key step in your lawn-care. See your turf supply and equipment distributor now. Or contact us for the name of the distributor nearest you.

Elanco Products Company, a division of Eli Lilly and Company, Dept. E-455, Indianapolis, Ind. 46206, U.S.A.

ELANCO

Balan

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Spray trains are efficient on mainlines in wide-open territory where it is possible to spray over 100 miles per day.

The ABC's of Railroad Weed Control

By DON N. JOHNSTON
Union Pacific Railroad

CLASS I American Railroads spend over $20 million annually on chemical vegetation control on about 200,000 miles of track. Practically all railroad operations are influenced to some degree by weed control.

Controlling vegetation provides proper drainage of the ballast section, a clear walkway for railroad workmen, improved sight distance for inspection of trains as well as at grade crossings and reduces the hazard of fire around bridges and other structures.

The loss of one structure can cost more than the cost of treating all structures on an entire railroad system for one year.

Weed control prevents slippage and makes it possible to inspect and work on the track section. Brush control prevents the fouling of signal and communication lines. Weed control is also necessary to conform to state and local laws requiring general weed control such as city laws not allowing weed growth over 24 inches high. Almost all states have noxious laws which require property owners, including railroads, to control certain weed species that are considered harmful to agriculture. New federal track standards also set certain standards for weed and brush control.

Herbicides are used in certain instances to establish fireguards to protect adjoining property from railroad-caused fires. Railroads are not only responsible for any damage caused to adjoining property, but in many sections of the country, railroad companies are required to pay fire suppression costs.

Annual spray programs provide for application of residual herbicides and in many instances contact and systemic herbicides in a set spray pattern over the ballast section on main lines and branch lines for bare ground weed control. Railroad yards and industrial trackage are also sprayed and granular herbicides containing residual herbicides are used on bridges and other structures mainly for fire protection.

Several major railroads employ vegetation control engineers who have the responsibilities to plan and carry out an annual vegetation control program. This program designates the chemical to be used, the

(continued on page 38)

NEW RYAN REN-O-THIN

You're looking at a unique machine built to catch the thatch it removes. The Deluxe Ryan Ren-O-Thin. Our all-new, professional model power rake with optional catcher attachment.

The new Ren-O-Thin power rake and catcher make thatch removal for turf renovation a once-over job. Together, they're a rugged pair built to take the punishment of professional use, and make your thatch clean-up job a little easier.

With or without its unique catcher, our new Ren-O-Thin is quite a machine. With its 4- or 7-hp engine it'll handle deeply embedded thatch. Ten-inch rear wheels help make the going easy. And a floating front axle smoothes out the bumps to keep blade height even.

A spring-loaded clutch is hand-held at the handlebar and dis-engages the reel drive when it's released. The handle itself may be reversed on the machine for back milling to break up aeration cores on the turf.

A flail bladed reel and several rigid blade reels are available and easily changed.

The new Deluxe Ren-O-Thin. A good piece of machinery. A unique piece of equipment. Ask your Ryan dealer for a demonstration or write for more information.

Ryan Turf Equipment, OMC-Lincoln, a Division of Outboard Marine Corporation, P.O. Box 82409, 2110 Cushman Drive, Lincoln, Nebraska, 68501. 74-RY-13

Ryan®
TURF EQUIPMENT

The power rake that catches what it rakes.

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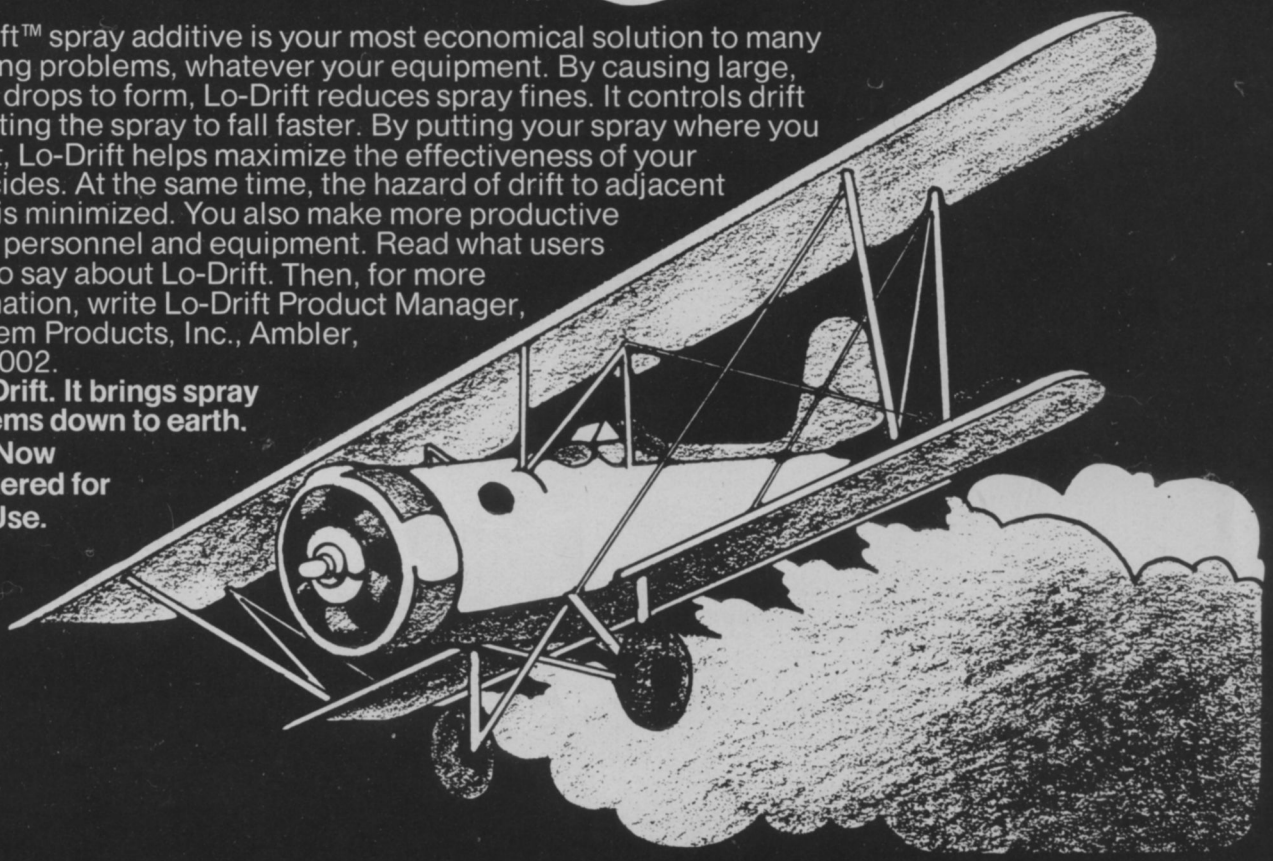
Lo-Drift™ puts your spray on target.

Lo-Drift™ spray additive is your most economical solution to many spraying problems, whatever your equipment. By causing large, heavy drops to form, Lo-Drift reduces spray fines. It controls drift by getting the spray to fall faster. By putting your spray where you want it, Lo-Drift helps maximize the effectiveness of your herbicides. At the same time, the hazard of drift to adjacent areas is minimized. You also make more productive use of personnel and equipment. Read what users have to say about Lo-Drift. Then, for more information, write Lo-Drift Product Manager, Amchem Products, Inc., Ambler, Pa. 19002.

Lo-Drift. It brings spray problems down to earth. New. Now Registered for Crop Use.



"Lo-Drift has increased our productivity about 25%."

"We're flying in the roughest places in the timber spraying business—hills, mountains, canyons. You can't terrain-fly this stuff. With Lo-Drift, our herbicides fall in larger, heavier droplets from 100 feet with accuracy you don't get unless you fly at 10 feet. It's impossible to get down to 10 feet in these parts.

"On extremely hot days when you normally have a lofting effect, Lo-Drift keeps those satellite droplets from flying. This has been the worst year for wind we've had. But we've had no complaints about drift since we began using Lo-Drift."

J. H. Henley, General Manager
Aero-Ag, McAlester, Okla.

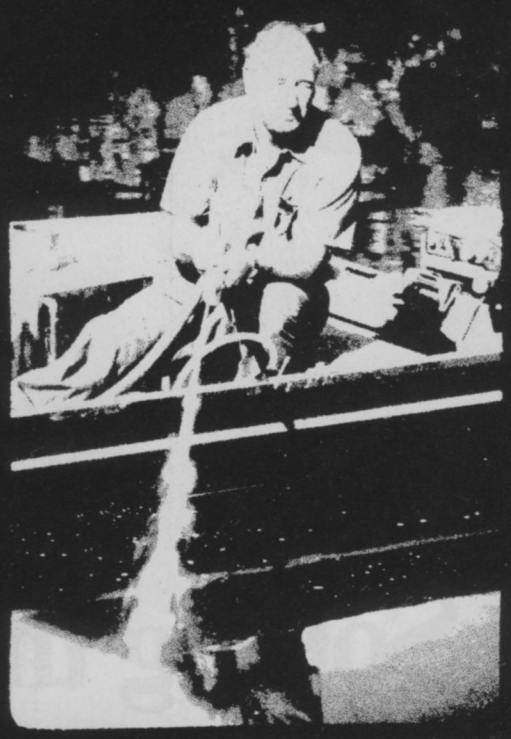
A RORER-AMCHEM COMPANY

"We have noticed a better kill with our herbicides because we're getting more chemical on target" (railroad right-of-way).

"I don't think we're getting better kill because of Lo-Drift—we're getting more on target.

"In an extreme case, we may lose a third of the chemical. Because we get less control, we need to raise the rate 33%. The chemicals are expensive and it costs us to do this. With Lo-Drift, we can confine swirls, minimize fines, and hold the spray where we want it."

David Mobley, Vice President
Mobley Company, Inc., Kilgore, Texas

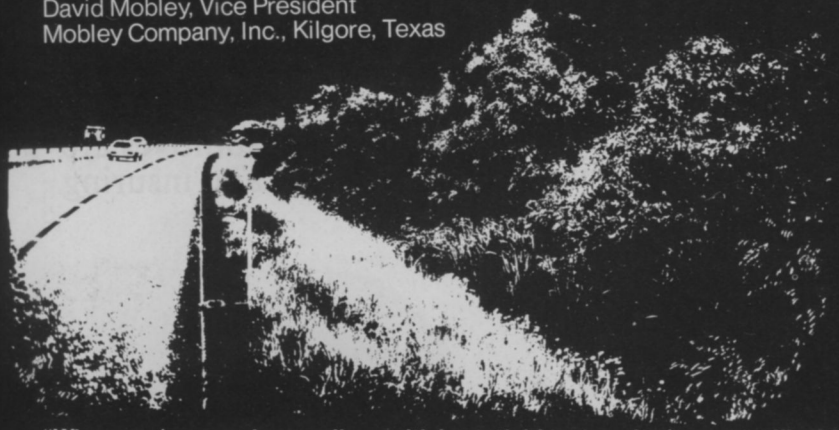


"Lo-Drift sticks to leaves. You can actually see where you sprayed and avoid double coverage."

"Lo-Drift will leave blobs—white film—on vegetation. Same as putting dye in the water. There's no mistake where you have and haven't been. Where you can get into trouble is in residential areas. (Without Lo-Drift) the stuff drifts off the lake and up into houses.

"We generally use both 2,4-D and MSMA. We used to cut off the 2,4-D near cotton. Now (with Lo-Drift) we spray right on by it. You can do more spraying and you don't need as much equipment. You use more equipment for more hours. Drift control is a lot cheaper than insurance claims."

Nelson Virden
Virden Weed Control Service, Jackson, Miss.



"When you're spraying medians with insecticides, you don't want traffic driving through a mist, and you don't want mist coming back on a crewman."

"Lo-Drift also helps us hit target areas along roadsides. A passing truck creates enough wind to blow a man's hat off. We lost a lot of chemical because of this. With Lo-Drift, we spray the same amount of chemical and do a better job because we get more chemical on target. Recently, we accidentally sprayed along a tomato patch with 2,4,5-T, where just the fumes will kill tomatoes. But we had mixed Lo-Drift with the spray and did no harm to the tomatoes."

Ned Crenshaw, Regional Landscape Superintendent
Tennessee State Highway Department, Nashville, Tenn.

60%

"Lo-Drift reduces drift by 60%. It means a better kill for the farmer."

"Spray can settle better with Lo-Drift. You don't have the fog going up like you do without it. And if you have a shower. Lo-Drift hangs on the plant.

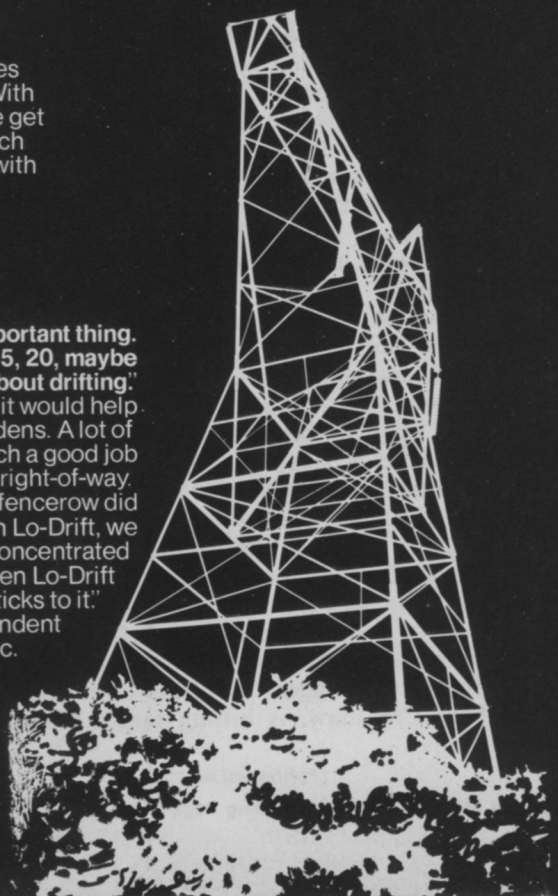
"With Lo-Drift, you have less evaporation. During aerial application, you can lose 20%. If you get 20% more chemical down, you're getting more coverage. It's inexpensive insurance if you use it right.

Bob Aukes, Owner and Manager
Central Aero Service
Jacksonville, Ark.

"Public relations is the most important thing. Make one enemy and you've got 15, 20, maybe 100. No complaints this year about drifting."

"What sold us on Lo-Drift is that it would help us keep from killing people's gardens. A lot of people ask us what we used to do such a good job of controlling brush only in our right-of-way. Some were disappointed that their fencerow did not get gleaned of brush too. With Lo-Drift, we got a better kill because of concentrated material and drift elimination. When Lo-Drift hits the plant, it sticks to it."

Leon Pippin, Operating Superintendent
East Mississippi Elec. Power Assoc.
Meridian, Miss.



AMCHEM®

AMCHEM PRODUCTS, INC., AMBLER, PA.

Solving the Drift Problem

Chemical drift problems have limited the number of operating days for most highway spray crews. New additives are extending operational time and insuring on-target spray.

SEVERE WIND and drift problems have long plagued highway spraying crews, who must not only battle Mother Nature's breezes, but must contend with winds generated by passing traffic as well.

In an effort to help reduce these drift problems, the Tennessee Highway Department last year conducted an evaluation of a drift inhibiting additive for their median and roadside spraying operations. And they report successful and unexpected benefits.

"Drift control is a problem that has always been with us," says Ned Crenshaw, regional landscape superintendent for the Tennessee Highway Department. "Drift has been a significant factor in reducing the number of days we can operate each year because of stiff breezes, and it's also caused a potential safety problem from chemicals being blown onto passing vehicles and onto nearby property.

"So we decided to do something about it."

"Tests were conducted with Lo-Drift, an Amchem product, which was mixed and applied with both herbicides and insecticides.

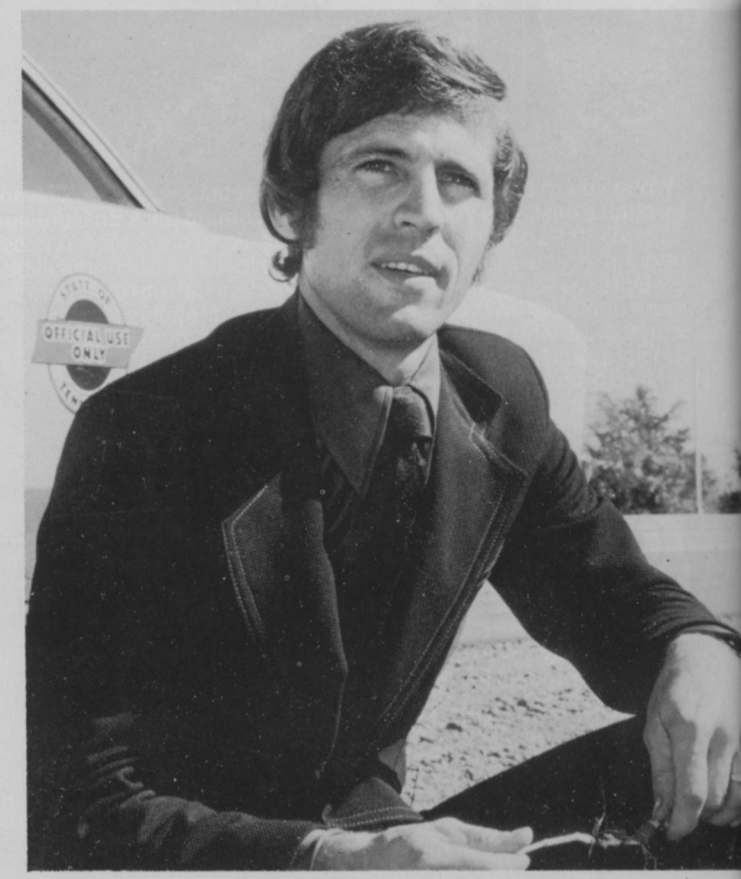
"We found that we were not only able to control drift, but were able to spray on more windy days when we normally couldn't have," says Crenshaw. "This meant we could get more spraying done in a year's time," he adds.

Crenshaw said that changes in weather previously limited some of their spraying operations, but that the use of a drift inhibitor has extended their operational time by several days.

"We have always wanted to make a grand slam on thistles with 2,4-D during the spring when they are most vulnerable," he says. "But during that time of year the wind is hard and the number of days we could spray was limited." He says with the help of a drift additive his crews were able to apply more 2,4-D this year during that important spring season.

One of the biggest problems of roadside spraying cited by Crenshaw, is hitting target areas with their chemicals.

(continued on page 50)



Ned Crenshaw, regional landscape superintendent for the Tennessee Highway Dept., says a drift inhibitor allowed his crews to spray roadsides and medians more accurately, without having to worry about drift.

◀ For More Details On Preceding Page Circle (134) On Reply Card

Beautiful turf is no accident. Make it happen with Acti-dione® 4-season disease control

The old saying that beauty is more than skin-deep is nowhere more applicable than on a golf course. Beautiful turf will not retain its beauty unless it remains healthy. In addition to normal wear and tear from golf play and stress from variable weather conditions, fungi are an ever-present health threat to turf. There's little you can do about golf play and weather, but you can control fungal diseases. An effective, economical way to combat fungal growth all year long is to use Acti-dione® Thiram and Acti-dione TGF® in a four-season disease control program. With fungi out of the way, turf has a better chance to grow strong and healthy — to resist weed infestation, to bounce back from injury and to survive adverse weather conditions. See your TUCO distributor today for complete information and assistance in planning a four-season disease control program with Acti-dione turf fungicides.

In Spring, watch out for Leaf Spot

The same conditions that promote spring growth can open the door to leaf spot, dollar spot and melting-out. For best results, apply Acti-dione TGF every 7 to 10 days, starting right after the first mowing.

STOP

Use Proxol* 80SP to help prevent insect damage

TUCO Division of The Upjohn Company, Kalamazoo, Michigan 49001

For More Details Circle (113) on Reply Card

*Trademark

2-2110

Prairie Grasses The Vista-Makers

By ARNOLD H. WEBSTER

THERE'S an old way to get a new look for highways, nature trails, recreation areas, and most dramatic of all, hard-to-mow roadsides. In two words, it's Prairie Grasses.

Our pioneer forefathers, newly arriving in the prairie midwest, saw miles of colorful grasses. As rapidly as they could, they plowed up those acres to get the fertile cropland so vitally important to our nation. Now only a few prairie remnants live to tell us mutely how their kind furnished the excellent grazing required by the multitudinous buffalo herds, or how their deep fibrous roots held soil from being blown away by ceaseless winds. Rains capable of moving acre-inches of plowed soil in hours could not erode those rolling prairie grasslands. Indeed, the grasses were a major conservator of moisture, a beneficent soil builder and as we're beginning to realize anew, a feature of magnificent, inspiring beauty.

These remarkable remnants grow on soil so sandy it's not worth an Iowa farmer's time to plow. It holds securely what is descriptively called "blow sand," so called because wind can and does literally blow it away when the protective mantle of grass is opened or removed. The grass roots and roots of myriad flowers (Liatris, Prairie Clover, Gentian, Compassplant, Potentilla, Spirea, etc.) have held the soil in place against the centuries of relentlessly tugging and whipping winds. Gracefully yielding to the buffeting of their tops while re-

(continued on page 34)

Left: Prairie grasses can provide low-maintenance roadside beauty to hard-to-mow slopes as well as the flatest berms.

MY THREE MEN FERTILIZED 700 TREES IN A DAY AND A HALF...

"My three men fertilized 700 trees in a day and a half with Jobe's Tree Food Spikes. I couldn't believe it . . . so I went around and checked behind them. Sure enough, they'd fertilized all 700 trees. Beautiful," says Richard Boehm, Superintendent, Military Golf Course, Wright-Patterson Air Force Base, Dayton, Ohio.

"I want to keep my trees growing strong and beautiful. That's why I used Jobe's Tree Food Spikes. I just couldn't believe that Jobes could save so much time but we did the entire course in a day and a half," concludes Dick Boehm.

"And you can see the difference they make. Similar trees were put in on the other side of the road. Ours are greener." confirms Boehm.

Jobe's Spikes can save just as much time for you. Each spike is a premeasured amount of the right combination of plant foods for trees and shrubs. This eliminates the chance for mistakes, while saving time and money. And they've proven effective in University tests.

Order direct or from your jobber-distributor. $30 per case (105 spikes) for 5 cases; $25 per case for 15 cases. Shipped pre-paid.

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Jobe's TREE FOOD SPIKES

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For More Details Circle (130) on Reply Card

How to get the best drift control for the

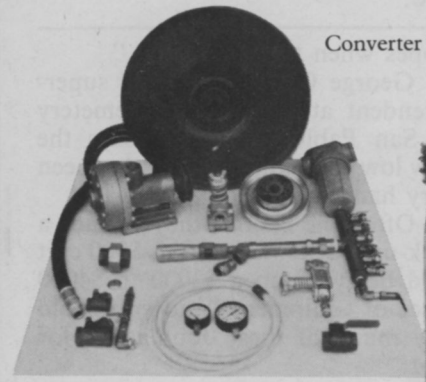
Aquatic use in drainage systems keeps ditches and canals weed free.

Visko-Rhap clears right of way along railroad tracks.

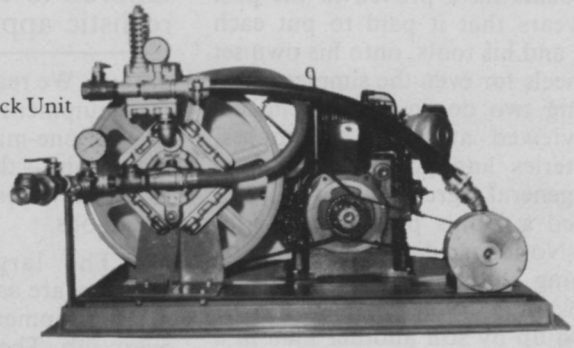
Roadside application of Visko-Rhap adjacent to cropland.

Power lines cleared by Visko-Rhap of unwanted foliage.

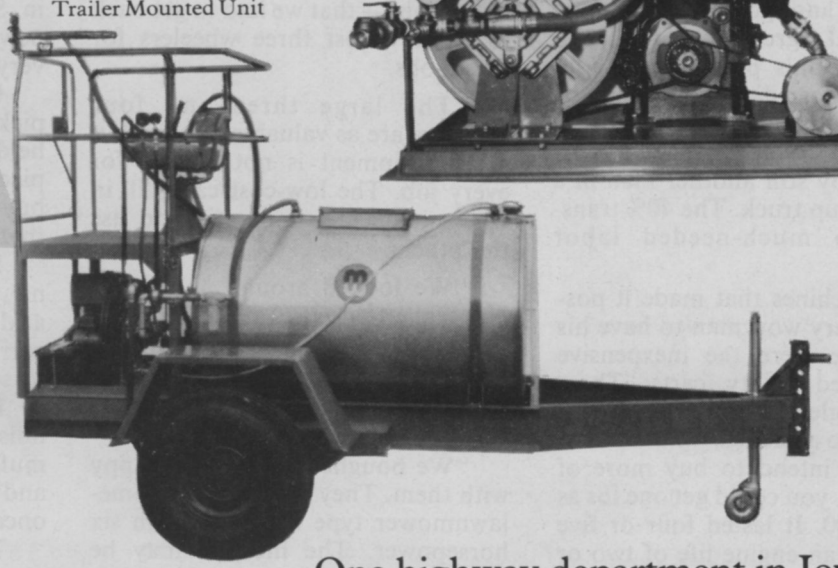
possible herbicide least possible cost.



Converter Kit



Pump Motor Pack Unit



Trailer Mounted Unit

We know you're just as concerned with cost control as you are with weed control. Visko-Rhap can solve both problems.

You may be able to convert your present spray equipment to the Visko-Rhap controlled-drift system for about $400, the price of our new Converter Kit. At that price you can't afford not to have it.

Or if you want a more sophisticated piece of equipment, our Pump Motor Pack Unit is available. And for the ultimate in drift control equipment we have the complete Trailer Mounted Unit.

Visko-Rhap has developed a system that keeps Visko-Rhap herbicide and water in separate tanks. They are blended together in a special mixing chamber which produces the thick invert emulsion. So there's no down time for mixing. Material can be left in the tanks overnight.

One highway department in Iowa reported savings of $13 per mile!

Visko-Rhap will clear roadways, power lines, waterways, or crop areas without the herbicide drift that can lead to costly damage suits or crop loss.

Visko-Rhap applies in thick, spaghetti-like strands that go only where directed, and break up into heavy oil coated droplets before contact. It hits only what you want to hit. And what it hits, it sticks to like glue. Spray patterns and droplet size are adjustable. You can even spray when it's raining.

If all this sounds too good to be true, we'll be happy to arrange a full demonstration. Just call your local Rhodia representative and he'll show you how to kill those weeds without murdering your budget.

Visko-Rhap™ by Rhodia

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Give Him Wheels, But ...

Rising vehicle costs cancel labor savings unless your vehicle is tailored to the job. Pinpointing the true annual cost is a more realistic approach to utility cart use.

MANY GROUNDS superintendents have proven in the past few years that it paid to put each man, and his tools, onto his own set of wheels for even the simplest jobs. Among two dozen superintendents interviewed at parks, campuses, cemeteries and golf courses there was general agreement that it increased a man's production about 40%. No longer did men waste time trudging across vast lawns, nor sit idle waiting to be dropped off or picked up by still another man in a $4,000 pickup truck. The 40% translated into much-needed labor savings.

The machines that made it possible for every workman to have his own vehicle were the inexpensive three-wheeled utility carts. There wasn't a single superintendent we interviewed two years ago who had one who didn't intend to buy more of them. Then, you could get one for as little as $400. It lasted four or five years, with an engine life of two or three; and you could get a new engine for $70 and install it yourself in a half hour.

But now, as with so many products, prices have shot up due to skyrocketing material costs and shortages, labor costs, slow payment on sales, general inflation and more sophisticated cart design. As a result, some three-wheelers now cost as much as some pickups did a few years ago. And not only have buying costs jumped, but so have maintenance costs since some of these vehicles are relatively sophisticated machinery; $10 per hour servicing and repair charges are not unusual for them.

Here's how Al Dennis, grounds superintendent at the Mt. Sinai Mortuary in Los Angeles describes it: "At Mt. Sinai there simply is no dropping off or picking up of workmen by others. Everyone here needs a set of wheels.

"We always did have three-wheelers, but their costs went up so much lately we turned more to four-wheelers, especially to compact pick-ups, which have their advantages. But that wasn't the whole answer. We realized we still were using equipment that was too expensive for one-man jobs requiring only light tools — that we had to get back to the low-cost three wheelers for these jobs.

"The large three and four wheelers are as valuable as ever, but such equipment is not needed for every job. The low-cost carts fill in where it's really impractical to use the others.

"We looked around and found one make that costs about $900, instead of $1400 to $2000. This manufacturer is the first to go back to the old low-cost types. My guess is there'll be more.

"We bought two and are happy with them. They use a simple home-lawnmower type of engine with six horsepower. The lifespan may be half that of a $2000 machine, but then it costs less than half as much to buy and service, and engine replacement is much cheaper. I figure a three year period before overhauling a bigger vehicle, and only two years with this low cost cart; but it has an engine you can afford to throw away and replace with a new one.

"Not only that, but a truck can't leave the streets; the man has to walk to his work area from the truck after driving to the vicinity. That's where our Jobmaster has an edge. It can go where others cannot go . . . and it doesn't leave tire marks, either. We use them to place vases, for flower pick-up, repairing and enclosing spaces (graves), general cleaning and light work. They carry rakes, shovels, hose and other things. They can't carry soil — we need a skiploader for that. And while a cart is barely large enough for a greensmower, it's too small to carry the grass, too. I wish the bed were about a foot longer each way."

"They have other limitations, too. Like any three-wheeler, you have to handle them carefully on slopes when the turf is wet."

George Quiello, grounds superintendent at St. Joseph's Cemetery in San Pablo, California says the new low cost utility carts "have been very handy for us."

Often, he claims, they replace a pick-up truck. Without his $900 cart he'd be tying up a $3000 to $4000 piece of equipment "and you could buy many of these Jobmasters for that!"

Besides the uses cited by Al Dennis, Quiello uses his to move hose and sprinklers, and sometimes carries a shovel and sack of concrete to set stones.

He has had no problems with hills or with lack of traction. But a muffler connection vibrated loose and a centrifugal clutch went out once.

The vehicle's ease of maintenance and low cost engine replacement were important in his decision to buy.

Wilford Cordova, grounds superintendent at Oakmont Country Club in Glendale, California, bought two low-cost three wheelers because the little carts do not damage the turf like a pick-up. He uses them almost entirely for watering and for odd jobs.

He welded two adapters onto the sides of each bed so that he can pull hoses without having to load and unload them. One cart easily pulls two or three hoses which, of course, can't be done by one man physically.

Wilford feels that his three-wheel utility carts each save 30 to 40 percent of a man's time.

He bought his first cart almost two years ago. It was one of the original models and gave him drive train troubles. But after spending $100 it works fine. The newer model has given him no problems. "They're easy to keep going," he explains.

Although these carts are low in

(continued on page 27)

For More Details Circle (133) on Reply Card

Industry News and Newsmakers

Secretary of Agriculture Earl Butz autographs a copy of the 1974 Yearbook of Agriculture, "Shopper's Guide," for American Association of Nurserymen Administrator Ray Brush. Designed to help shoppers buy the right products for the best price, "Shopper's Guide" has six sections including one on gardening that ranges from buying seeds to trees and shrubs, roses, groundcovers and vines, cacti and fruit. Brush authored an article entitled "Nursery Stock — What to Buy and What to Expect."

Wastewater, Land Treatment Subject of New SIA Manual

The Sprinkler Irrigation Association has announced a March 1 publication date for its Wastewater Resource Manual which will deal with land treatment and recycling of municipal and industrial wastewater. The manual will stress the practical engineering concerns associated with wastewater project design and has been written for use by systems designers and operators.

The Manual will be issued in a green, hard-cover post-binder containing approximately 500 pages. Periodic updating and revision of material on the latest state of the art will be available after the first year on a subscription basis.

Part I of the Manual deals with both the legal and technical aspects of land treatment. The legal section covers federal, state and regional laws, local ordinances and regulations and land use aspects and social considerations.

The technical portion of Part I is concerned with wastewater characteristics; pretreatment and storage of wastewater; hydrogeologic site considerations; soil physical, chemical and biological processes; botanical components; climatologic considerations; hygenic and nuisance concerns; conventional sanitary engineering treatment processes; hydraulics, with emphasis on irrigation system design; and a review of existing land application technology.

The Manual presents a detailed study of project design and describes in detail typical systems as examples. Under this section, Part II, factors effecting the criteria or data needed include discussions of geology, soils, hydrology, weather, agricultural practices and adjacent land use.

Included will be a design and engineering section which will cover pretreatment and storage, piping,

(continued on page 27)

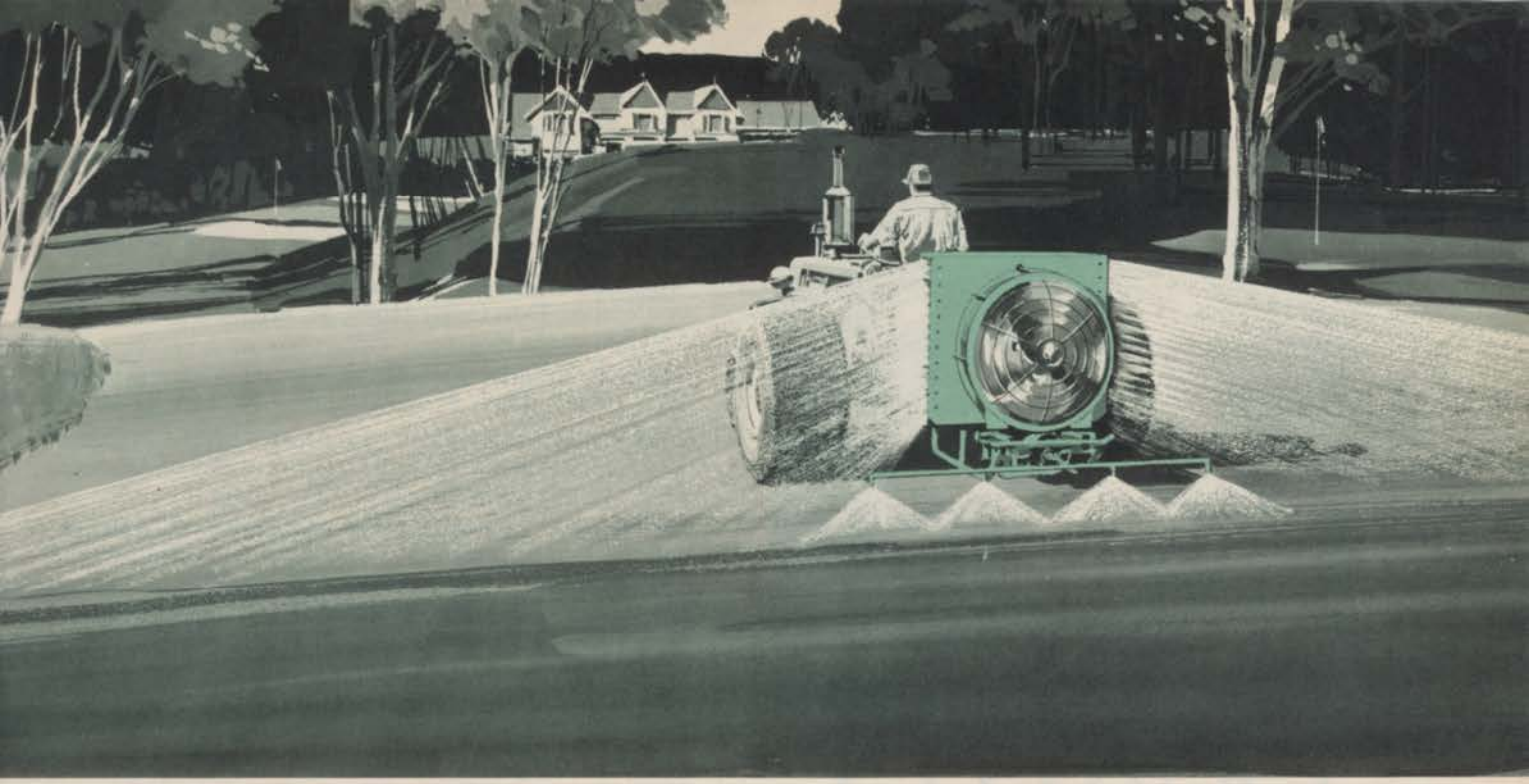
Barnett Elected Chairman Of ICI United States, Inc.

Robert P. Barnett has been elected chairman of the board and chief executive officer of ICI United States, Inc., Wilmington, Del., succeeding Edward J. Goett. Barnett will retain his position as president of the company.

Goett will devote full time to duties as president and chief executive officer of ICI Americas, a company responsible for activities of ICI group companies in North, Central and South America.

ICI United States is the United States operating subsidiary of ICI Americas. Both Delaware-incorporated companies are subsidiaries of Imperial Chemical Industries Limited (ICI) of London.

The Associated Landscape Contractors of Massachusetts, the largest landscape contractors' association in the northeastern U.S., have elected officers for 1975: (from left) William Hatcher, Manchester, Mass., assistant secretary-treasurer; Daniel Pellegrino, Newton, Mass., secretary-treasurer; Norman F. Brisson, Lincoln, Mass., president; Frederick Heylinger, Shirley, Mass., past president; Charles A. Laughton, North Chelmsford, Mass., vice president.



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Meeting Dates

American Society of Consulting Arborists, 8th annual conference, Don CeSar Hotel, St. Petersburg, Fla., Feb. 13-15.

National Arborist Association, annual winter meeting, Don CeSar Hotel, St. Petersburg, Fla., Feb. 16-20.

Joint Management Clinic, sponsored by the National Landscape Association and Garden Centers of America, Galt House, Louisville, Ky., Feb. 16-20.

Golf Course Superintendents Association of America, International Turfgrass Conference and Show, The Rivergate, New Orleans, La., Feb. 16-21.

Michigan Association of Nurserymen, annual convention, Grand Rapids Auditorium, Grand Rapids, Mich., Feb. 18-20.

Wisconsin Arborist Association, annual conference, Scotsland Resort, Oconomowoc, Wis., Feb. 19-20.

Sprinkler Irrigation Association, technical conference, Hyatt Regency Atlanta, Atlanta, Ga., Feb. 23-25.

Southern Chapter, ISTC, annual meeting, Hunt Valley Inn, Hunt Valley, Mass., Feb. 23-26.

18th Annual Iowa Shade Tree Disease and Insect Short Course, Memorial Union, Iowa State University, Ames, Iowa, Feb. 26-28.

American Sod Producers Association, annual mid-winter conference, Doubletree Inn, Tucson, Ariz., Feb. 27-28. (Board of directors will meet Feb. 26.)

Southern Turfgrass Association, 1975 turfgrass conference and show, Cook Center, Memphis, Tenn., March 2-4.

Midwest Turf Conference, Purdue University, Lafayette, Ind., March 3-5.

10th Annual Maryland Turf Conference, Adult Education Center, University of Maryland, College Park, Md., March 6.

Northeastern Forest Pest Council, 1975 winter meeting, Copley Plaza Hotel, Boston, Mass., March 10-11.

RCGA and Canadian Golf Superintendents Association, national turfgrass conference and show, Skyline Hotel, Toronto, Ontario, March 18-20.

Western Society of Weed Science, annual meeting, Del Webb Townhouse, Phoenix, Ariz., March 18-20.

Canada Chapter, ISTC, annual meeting, Four Seasons Sheraton, Toronto, Ontario, March 19-22.

National Club Association, annual conference, Shoreham Hotel, Washington, D.C., April 13-15.

Wyoming Recreation and Park Association, Lander, Wyo., April 25-26.

Arizona Turfgrass Conference, Camelback Sahara Hotel, Phoenix, Ariz., May 7-8.

Western Chapter, ISTC, Riviera Hotel, Palm Springs, Calif., May 11-15.

Florida Nurserymen and Growers Association, 1975 convention, Innisbrook Resort and Golf Club, Tarpon Springs, Fla., May 22-24.

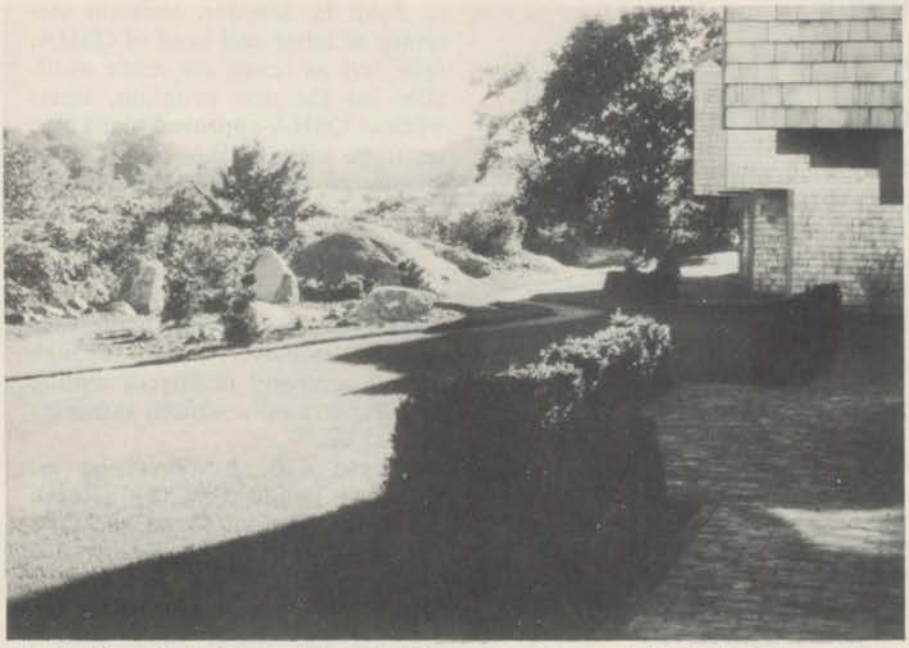
American Association of Nurserymen, centennial convention, The Palmer House, Chicago, Ill., July 19-23.

NEWS *(from page 24)*

spray distribution equipment, field layout considerations, operational and management considerations, project economic evaluation and a review of environmental considerations. Typical systems described will include those for municipal, industrial and agricultural areas.

The appendix of the Manual will include a listing of firms engaged in design or installation of wastewater systems; a listing of federal, state and local wastewater regulatory agencies; a buyer's guide of firms manufacturing equipment for the wastewater field; a bibliography of technical information; a "dictionary" of sprinkler and wastewater terminology; and useful tables and conversion factors.

Pre-publication sales are being taken until Feb. 28 at the Association's offices at 13975 Connecticut Ave., Suite 310, Silver Spring, Md. 20906. Cost for the Manual in pre-publication orders is $40. After March 1, the Manual will sell for $45. Orders should be accompanied by check or money order.



At the Bass Rock Condominiums in Gloucester, Mass., recipient of a Thoreau Merit Award for the residential category in the second annual statewide competition sponsored by the Associated Landscape Contractors of Massachusetts, Inc., much of the excavated granite rubble was used to create groupings combining rugged stone, soft wood chip mulch and green foliage into an assortment of textures and shadows. Three awards were presented in each of four categories — institutional, residential, commercial-industrial and governmental.

Forest Service Announces Move of 3 Research Units

U.S. Forest Service research units in Columbus, Ohio, a part of the Northeastern Forest Experiment Station, will transfer to the Station's Delaware, Ohio, laboratory this month, according to F. Bryan Clark, station director. Clark said the primary reason for the move is to achieve a more efficient and economical operation.

Current Forest Service research at Delaware deals with forest insect and disease problems affecting eastern tree specifies. The Columbus units will add three new research functions to the laboratory's programs — forest economics, wood utilization and forest management.

Objective of the economics unit is to determine the income potential from forest lands in the Northeast when management for timber and other uses is applied. Another unit is responsible for defining and classifying tree and log characteristics affecting the quality and usefulness of hardwood and eastern softwood species. The third unit develops improved techniques for measuring the growth and yield of forest stands in the upland oak region of the eastern United States.

The Northeastern Station, which is responsible for forest-related studies in 14 states, is one of eight Forest Service regional research stations with programs aimed at protecting, managing, using and replenishing the nation's forest resources.

New Synthetic Insecticides Shown To Be Less Toxic

New pyrethroids, synthetic substitutes for the natural insecticides of the pyrethrum plant, may be even more effective against target insects and less hazardous to people and animals than the natural product, according to USDA scientists.

Extremely low mammalian toxicity of the pyrethroids is evidenced from data collected by industry. These data show that the new pyrethroids are less toxic to laboratory animals than DDT or carbaryl.

In greenhouse tests conducted by USDA's Agricultural Research Service (ARS) in Beltsville, Md., the new insecticides proved lethal to a wide range of agricultural and disease-bearing insects.

Pyrethroids are especially effective against aphids and certain other sucking insects, but will also kill chewing insects. Yellow fever mosquitoes, house flies, American and German cockroaches, Japanese beetles, boll weevils and Colorado

(continued)

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potato beetles were killed after treatment by one or more of the new pyrethroids tested by ARS.

Natural pyrethrum is obtained from dried, powdered flowers of the pyrethrum plant, *Pyrethrum cineraefolium,* and is used in insecticidal sprays and dusts. It is not harmful to plants and is regarded as one of the world's least toxic insecticides to man and animals. But supplies of these flowers are limited so natural pyrethrum is expensive.

Commercial interest in safer insecticides has been increasing since the first pyrethroid, allethrin, was snythesized in 1949 by Milton S. Schecter, chief of the Beltsville Chemical and Biophysical Control Laboratory.

In recent ARS research, entomologist William N. Sullivan applied the experimental pyrethroid compounds in aerosol and dust forms under conditions simulating disinsection of aircraft and other enclosed areas.

"These promising new pyrethroids are applicable to the home, the farm, greenhouse or warehouse as well as in commercial aircraft," Sullivan said.

The tests included the two percent resmethrin aerosol, which is approved by the World Health Organization as a substitute for a pyrethrum-DDT formulation used in disinsecting international aircraft to prevent the spread of insect vectors of disease. The two percent resmethrin formulation has just been cleared by the EPA.

Sullivan also tested three additional pyrethroids, all of which are still experimental.

Small Businesses To Gain Penalty-free OSHA Advice

On-site job safety and health consultations for small businesses, without citations or penalties, will shortly be provided by OSHA.

The new program will assist small businessmen in states where OSHA is enforcing federal job safety and health rules.

States operating their own job safety and health programs under OSHA-approved plans are already authorized to provide such consultative services to small businessmen.

John H. Stender, assistant secretary of labor and head of OSHA, said that as funds are made available for the new program, states without OSHA-approved plans may contract with OSHA (under provisions of the 1970 Occupational Safety and Health Act) to provide these services using state personnel.

"As in a normal inspection," Stender said, "each consultation will consist of an opening conference with the employer, a walk-through of the company facility, a closing conference, and a written summary of findings."

There will, however, be no citations issued for any alleged violations found and no penalties proposed, Stender added.

The consultation agreements also will contain provisions for immediate abatement of imminent danger situations and for protecting the confidentiality of trade secrets.

Under the terms of OSHA contracts with the states, a clear separation will be maintained between consultative and enforcement staffs.

Stender emphasized that consultants' files will not be used to trigger an OSHA inspection. In the event of a subsequent OSHA inspection, however, a federal compliance officer will not be precluded from issuing citations regardless of earlier findings or recommendations of the state consultant.

During a walkthrough inspection, consultants will explain to the employer which OSHA standards and rules apply to his workplace, explain technical language and application of applicable standards, point out to the employer where he is not complying with OSHA standards, and, where possible, suggest means by which identified hazards may be abated.

The consultation program came about as a result of congressional action directing such a program and OSHA's concern for helping small businesses comply with job safety and health rules.

To date, 26 states or territories have OSHA-approved plans, so will not enter into the OSHA consultation contracts. They are: South Carolina, Oregon, Utah, Washington, New Jersey, North Carolina, California, New York, Minnesota, Maryland, Tennessee, Iowa, Kentucky, Alaska, Virgin Islands, Colorado, Michigan, Vermont, Illinois, Connecticut, Hawaii, Nevada, Indiana, Wisconsin, Wyoming and Arizona. □

(more news on page 30)

A committee formed to develop new guidelines for tree evaluation met recently in the Washington offices of the American Association of Nurserymen (AAN). Leo Donahue (left), AAN Administrator; Ray Gustin, Gustin Gardens, Silver Spring, Md.; Dr. L. C. Chadwick, Columbus, Ohio; and Frederick R. Micha, Monroe Tree and Landscape, Inc., Rochester, N.Y. are shown discussing tree evaluation problems with John Manwell (right), attorney with Kirkland, Ellis & Rowe of Washington, D.C., and Chicago, Ill. The committee is seeking to change Internal Revenue regulations to provide for more equitable treatment of large tree and shrub losses. Gustin, Chadwick and Micha represent the interests of the International Shade Tree Conference, the American Society of Consulting Arborists and the National Arborists Association, respectively.

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For More Details Circle (124) on Reply Card

FMC Recalls 100 Workers

FMC Corporation's Outdoor Power Equipment Division recalled approximately 100 employees in mid-January, according to John Platta, creative services supervisor for the division. These employees are part of a 200-man lay-off which took place Dec. 1, 1974.

The Outdoor Power Equipment Division, located in Port Washington, Wis., manufactures the Bolens line of lawn and garden equipment. Production levels in the division are expected to continue at a reduced rate pending a change in economic indicators in the outdoor power equipment industry.

Advertising Agency Named For Lawn-Boy Equipment

Valentine-Radford Advertising, Inc., a nationwide advertising agency headquartered in Kansas City, Mo., has been named advertising agency for Lawn-Boy rotary mowers and outdoor equipment.

Lawn-Boy products are marketed by OMC-Lincoln, a division of Outboard Marine Corporation.

Valentine-Radford has represented OMC-Lincoln product lines for more than 16 years, first with Cushman golf and industrial vehicles, then Pioneer chain saws and Ryan turf equipment. A separate Valentine-Radford division also handles public relations for all OMC-Lincoln product lines.

President of Golf Architects Lauds American Designers

Golf course design and the practice of golf course architecture definitely has become "Americanized" during the past ten years, according to Robert Muir Graves, president of the American Society of Golf Course Architects.

"Today, golf course architects from North America are designing courses around the world," Graves said. "When someone wants a great golf course—whether it is in Japan, Africa or Russia—he consults with American golf course architects."

Graves said that while American golf course architects are no less aware of the early strategic concepts of plan and the three major types of design — the heroic, strategic and penal — they are responsive as well to the more mundane but equally important basic principles of maintenance, irrigation and drainage.

The result, he said, is some of the best-designed and most beautifully conditioned golf courses in the world.

"These courses, whether they are here in North America or in a remote corner of the world, are both a sound test of golf and a pleasure to play," Graves said.

The first golf course architects in this country were either of Scottish origin, or else they went to Scotland, where the game of golf was first played around 1400 A.D., to study the great courses of Prestwick, St. Andrews and Musselburgh.

These early courses were often built on links land by the sea, and their charm lay in the infinite variety of the sand hills with their bends and hollows and valleys. These natural contours gave the holes individuality, with the lay of the land dictating the nature of play.

Early golf course architects became thoroughly familiar with the strategic concepts embodied in these courses and made every attempt to

(continued on page 36)

Bandini bags it!

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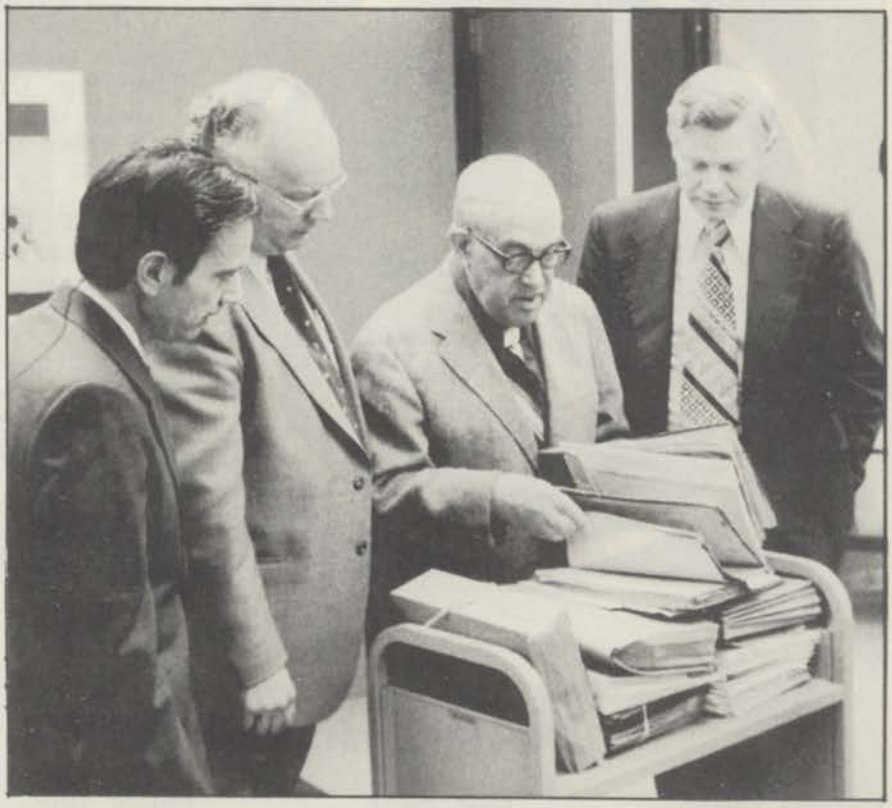
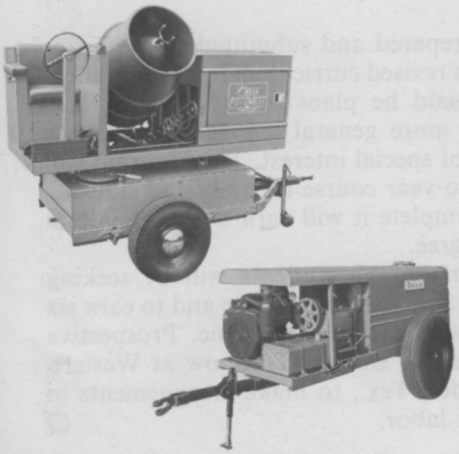


Dr. Richard P. White, former executive vice president of the American Association of Nurserymen (AAN), gives an inventory of materials compiled during research for his forthcoming book, "A Century of Service: A History of the Nursery Industry Associations of the United States." Henry Gilbert (left) and Dr. Richard Farley accepted the documents for the USDA Library. AAN Executive Vice President Robert F. Lederer (right) noted that the book will debut at the AAN 100th Convention in Chicago at the Palmer House, July 19 to 23.

Seasonal leaf drop is one thing...



. . . but loss of leaves through bark and leaf infestation is quite another. To protect your shade trees from disaster, a well-planned spray program is well worth the time it requires — and FMC spraying equipment is the best way to go. FMC's Rotomist® controlled-air sprayers for example, are specifically engineered to give you maximum penetration and assure you the best possible coverage and protection. FMC's line of high pressure sprayers also afford you the versatility and performance you need...are available skidmounted or in trailer models, with hose and gun for effective shade tree applications. You won't find any better tree protection than with FMC sprayers. Contact your nearest FMC representative for a demonstration today, or write the FMC Corporation, Agricultural Machinery Division, Jonesboro, Arkansas 72401.

FMC Environmental Equipment

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Adelphi
KENTUCKY BLUEGRASS
(U.S. Plant Patent No. 3150)

NOW SETS U.S. GOVERNMENT* STANDARDS FOR THE DARK GREEN COLOR OF ALL FUTURE BLUEGRASSES!

*Source: Plant Variety Protection Office, U.S. Dept. of Agriculture

In 10 years of man-controlled parentage breeding and over 7 years of university and field testing, "Adelphi" has earned a top rating for overall performance.

"Adelphi" offers the features most wanted in turf. Professionals and home gardeners, alike, are making it the most widely accepted and universally acclaimed bluegrass in 30 years.

For good looks throughout the entire growing season ...excellent density...good disease resistance and tolerance to moderately close mowing, it's...MAN-MADE "Adelphi"...A FIRST IN TURF!

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Golf and Operations Course — Western Texas' New Program

AFTER ONE FULL semester of working with the Golf and Grounds Operations program at Western Texas College (WTC), Snyder, Tex., Instructor Perry Turnbow is guardedly optimistic about the future of the program.

Turnbow, a graduate of Texas Tech University in Lubbock, Tex., was named to direct the new WTC program last spring. He was responsible for activating a curriculum which had been planned by the college with the advice of knowledgeable professionals in the field and approved by the Texas Education Agency.

Turnbow said he considers his first class enrollment, which started in late August, 1974, and was made up of 15 young men, a good turnout for a new program. He has been impressed by the caliber of the students, finding them generally serious about learning what the course has to offer.

Several of them have worked in and around golf courses and pro shops in their hometowns, and have had the opportunity to handle equipment and observe the conditions of the greens at various periods. Others have done yard maintenance work for their families and neighbors.

From the standpoint of student interest, Turnbow said he would rate golf course management highest. Students have also expressed interest in landscape contracting, wholesale nursery enterprises and contract maintenance work.

The curriculum for the first semester included Equipment and Shop, Principles of Plant Growth, Applied Communications, Principles of Management, and Physical Education. In addition, the students have attended various turfgrass workshops and equipment demonstrations to gain exposure to new ideas in those fields.

Western Texas College is one of west Texas' newer institutions of higher learning, having opened in new facilities in the fall of 1971. Only one building remains to be completed, but landscaping has not been finished. The students have had the opportunity to study landscape plans and plants by working on the landscaping.

In the spring semester, which is already underway, the students will be concentrating on the study of soils and fertilizers, turfgrass science, pest control and landscape construction.

Turnbow has prepared and submitted to the Texas Education Agency a revised curriculum to become effective next fall. He said he plans to broaden the curriculum to include more general management studies and some electives of special interest. The program will continue to be a two-year course of study and students who successfully complete it will earn the Associate in Applied Science degree.

During the summer, the students will be seeking employment to gain practical experience and to earn six hours of college credit at the same time. Prospective employers are invited to contact Turnbow at Western Texas College, Snyder, Tex., to make arrangements in advance for student labor. □

KING of the MOUNTAIN

"We found the BOWIE HYDRO-MULCHER ideal for erosion control and establishment of new turf on the difficult terrain we have here at Sun Valley."

Kenny Zimmerman, Director of Golf and Grounds, Sun Valley, Idaho

Kenny Zimmerman, Director of Golf and Grounds, Sun Valley Company, Inc., is responsible for the summer maintenance of Bald Mountain's ski slopes, 40 acres of hotel grounds and 105 acres of golf course. He needed a seeding unit that would give quick growing results to prevent soil erosion and yet be completely adaptable to the rugged terrain. He found his answer in the Bowie Hydro-Mulcher.

Whatever your seeding problems, Bowie Hydro-Mulcher has the answer. Get the kind of ground cover you want and stop erosion fast. Ideal for landscaping greens, lawns, roadsides, steep slopes and everywhere. The Bowie Hydro-Mulcher plants, seeds, sprigs, fertilizes, waters, sprays and mulches, all in one easy operation. Get the facts and you'll get Bowie Hydro-Mulcher!

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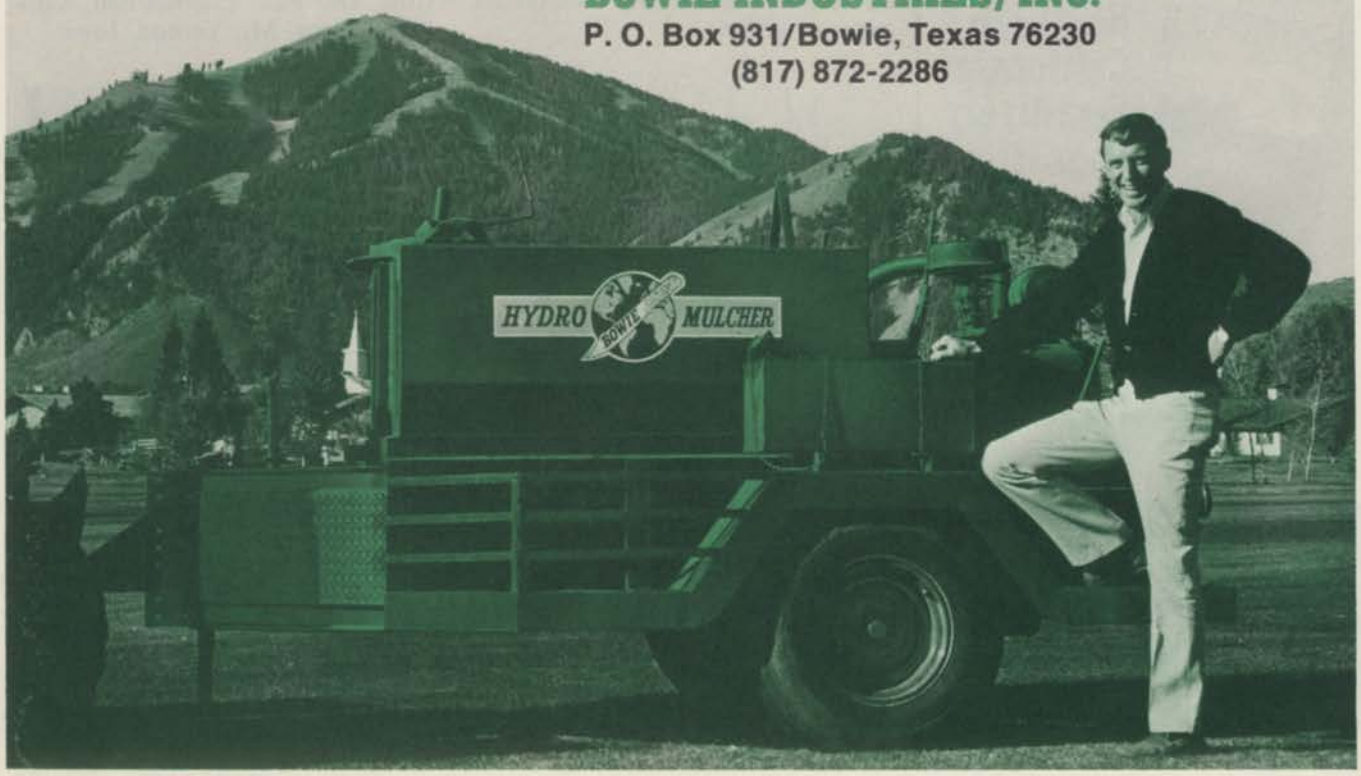

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GRASSES *(from page 18)*

maining unmoved at their roots, the grasses furnish an ever-changing, ever-enchanting display of rippling green, gold, red, brown and silvery sheen.

The practical worth to you and me is the low-maintenance beauty of these prairie grasses. Imagine miles of roadside that do not need to be mowed, particularly those extremely difficult slopes where mowing is a hazard to life and equipment. Visualize for a moment the miles of spring's green, summer's red-gold, autumn's gold-browns, then recall gratefully those miles weren't mowed. Think, momentarily, how tall grasses rich with seed heads served as protection for song birds or elusive quail and pheasant, then remember that established prairie grasses crowd out the unwanted weeds, as a bonus.

How long does it take the prairie grasses to become established? About three years. The first year, most growth is underground in roots. Above ground are the usual weeds. Second year growth begins to show prairie promise and the third year the wisdom of one's planning and waiting becomes happily evident.

Three years is a long time for our public to be patient, say nothing of waxing increasingly confident. Add to that the people who declare positively they want a short-clipped lawn effect everywhere in road banks and ditches. These are the weak points in prairie grass use along roadsides. However, where people have been able to see the mature unbroken beauty in long expanses of native grasses, they've been awed into open admiration. The best way to win them is to show them.

Suppose a city has some areas temporarily torn up by construction, areas that might be especially difficult or impractical to mow. Prairie grass seeded there will have a good chance to start, and after a couple years' growth, it can be pointed out to the public that this practical bit of loveliness is the same kind of verdure our pioneer forefathers rode, drove and walked through as they moved west in their covered wagons.

Fortunately we always have among us people who are looking forward with vision clear enough that they can see the value of yesterday's good things, too. People like these often think of native grasses as vista-makers in landscaping. Industrial parks, where acres of land serve as backdrop for handsome architecture, are enhanced by the natural, informal and easily maintained cover of grasses.

Borrow pits, usually an unsightly problem, can be given a natural beauty that makes them a distinct asset esthetically and ecologically by seeding with prairie grasses. Few other plantings will survive where rugged grasses will take root and thrive.

Sometimes small tracts of prairie land are condemned for building or construction. This can afford a way to speed up development of land on which a prairie planting is planned. Small squares of prairie sod — taken three or four inches deep — grass, flowers and all, can be transplanted to the new location, thus gaining a year or so in time needed to produce the desired results.

Interested individuals can help as they consider landscaping personal, privately owned areas. A site developer can make admirable use of prairie grasses on slopes difficult to mow but so situated that they form a major background view for several homes in the development. The view of gently rippling, ever-changing native grasses has a relaxing effect on people in every season. This is the recreative effect cities strive for as they plan green belts. It can be achieved — practically — with grasses and prairie flowers.

How does one go about establishing a planting of prairie grasses? Here are some practical pointers from Dr. Paul Christiansen, Cornell College, Mt. Vernon, Iowa:

Big Blue Stem, one of the many varieties of native grasses, grows well in the sandy soils of the Prairie States.

Northern California Fertilizer bags it!

NITROFORM*
organic nitrogen

The turf nitrogen for nursery stock, too.
Gives the same steady sustained growth.

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BANVEL®
herbicide programs control tough brush, including evergreens, for 3 to 5 growing seasons.
And what more? Banvel herbicides permit grasses to flourish where you want grasses . . . because Banvel, a selective, systemic herbicide, gets to the roots of vegetation problems by translocation.
Turn the page for reasons why Banvel herbicidal effectiveness becomes the key to cutting the cost of vegetation control. . . .

Why and how Banvel® industrial herbicide formulations in your vegetation control program make excellent economic sense....

Q. We've sprayed picloram for two or three cycles and got rid of many brush species, but the tough brush gets bigger and tougher. Our problem is to control a mixture of oak, ash, hickory, poplar, sassafras, cedar . . . well, you name it. What formulation do you suggest in a long-term selective brush control program along our transmission line right-of-way?

A. Basal applications of Banvel®-510, one pound dicamba and two pounds 2,4,5-T per gallon, has proved effective and economical for the control of both hardwood and evergreen species, including root-suckering trees such as sassafras, chokecherry, aspen, sumac, and locust.

As with picloram, Banvel-510 herbicide is applied by hydraulic spray, using a mix of two gallons of Banvel-510 in 98 gallons of oil, at the rate of approximately 100 gallons of spray mixture per acre of brush.

Spray the basal parts of the brush and tree trunk from the ground line up to a height of 1-1/2 to 2 feet. Spray until runoff, with special emphasis on covering the root crown.

Treatment may be made at any time during the year.

As a foliage spray with water, use Banvel®-320 or Banvel®-710 at the rate of one gallon in 99 gallons of water and spray the entire plant to runoff.

Q. Our experience indicates that picloram is a long-residual material, and our company is greatly concerned about this. How does Banvel dicamba compare in this regard?

A. The half-life of picloram is in excess of 100 days. The half-life of Banvel dicamba is 25 days. Once Banvel dicamba gets into the plant system, it works over a period of two or three years in disrupting the plant's cellular structure. In the soil, Banvel dicamba that is **not** absorbed by the root system of the plant dissipates quickly. It breaks down into harmless compounds in the process of biodegradation.

Soil moisture, organic matter content and temperature greatly influence Banvel dicamba degradation, but metabolism by soil micro-organisms is the major factor in degradation.

Q. Can we tank mix Banvel dicamba with 2,4-D and 2,4,5-T?

A. You certainly may. Banvel herbicides have Federal label registration for tank-mix combinations with the phenoxies for both water- and oil-soluble formulations. Also by tank-mixing with 2,4-D and 2,4,5-T, you can double the acres you can spray.

Q. Some parts of our right-of-way are cattle-grazed. We find that picloram is not registered for use in grazing land. What about using Banvel herbicide here?

A. Banvel dicamba herbicide has Federal registration for use on pasture grasses. Established tolerance in grass is 40 ppm and in milk, 0.05 ppm. There is no withholding period for meat animals on Banvel dicamba when used alone on treated areas, with this exception: do not graze meat animals on treated areas within 30 days of slaughter. Also, do not graze dairy animals on treated areas within 60 days after application at high application rates; up to 90 days delay is required before harvesting hay.

No tolerances have been established with 2,4-D or 2,4,5-T in or on grass. 2,4-D, 2,4,5-T and picloram are federally registered for use on pasture grasses. However, picloram has EPA registration for use in Texas.

Q. What about Banvel 4-W.S. herbicide toxicity?

A. Banvel® 4-W.S. herbicide was developed and tested during the period when extensive toxicological and residue requirements were necessary to obtain Federal registration. It has met every requirement of the USDA, the FDA and the EPA in this regard, and obtained label clearance for industrial brush control in 1968. Be sure to observe grazing and harvesting restrictions shown on the label.

Although Banvel 4-W.S. is several times more active on brush than the phenoxy compounds, it is approximately five to ten times less toxic than 2,4-D or 2,4,5-T. The LD_{50} in rats for dicamba acid is 2900 mg/kg. 2,4-D is 300-470 mg/kg, and 2,4,5-T is 390-640 mg/kg.

Q. Much of our right-of-way is overgrown with a varied mixture of brush and weeds. What chemical should we use in a foliar spray?

A. If there is a mixture of species—conifers, softwoods, hardwoods, vines—you need a formulation that controls the broadest spectrum. Use Banvel-320, containing one pound dicamba, one pound 2,4-D and one pound 2,4,5-T per gallon. Or use Banvel-710, containing one pound dicamba and two pounds 2,4,5-T per gallon. Banvel dicamba alone controls most species, including softwoods that phenoxies do not control. Moreover, Banvel dicamba permits grasses to flourish.

Q. I have willows taking over my ditch banks. Picloram and 2,4,5-T are not registered for ditch bank use. What chemical can I use to get rid of these trees and a lot of other brush and weeds?

A. Banvel 4-W.S. dicamba gives excellent control of willows and their destructive, water-seeking roots, and is registered for ditch bank brush control. It also destroys broadleaf weeds and extensively rooted vines. Because it is a selective weedkiller, at proper dosages it will not harm grasses, so you can avoid erosion along banks of irrigation or drainage ditches. Banvel dicamba, alone or in combination with 2,4-D, is registered for vegetation control along ditch banks.

Q. Last year we had difficulty getting an adequate supply of Banvel dicamba and phenoxy in premixes, or in any form. What is the supply situation this coming year?

A. Banvel dicamba and phenoxy should be in adequate supply, in spite of demand that has doubled each year for the past three years for use on several crops and on grazing lands throughout the United States. Recently, Velsicol completed a new manufacturing plant that has more than doubled the production of Banvel dicamba.

At present, our supplies of 2,4-D and 2,4,5-T acid are limited. You can, however, profitably stretch the 2,4-D or 2,4,5-T materials you are able to find with the various Banvel dicamba tank mixes.

Q. Can I use Banvel dicamba to sterilize certain areas?

A. Banvel dicamba is not a soil sterilant, and should be used at label dosage rates for brush and broadleaf weed control. Banvel 4-W.S. herbicide is selective, allowing grasses to grow for soil cover and to prevent erosion. If you wish to sterilize the soil, your contract applicator can advise you, or call Velsicol on the Banvel "Hot Line."

Q. How does Banvel 4-W.S. herbicide kill brush? Why is it more effective than the phenoxy compounds?

A. Phenoxy compounds enter the plant through the leaves and bark, while Banvel 4-W.S. herbicide enters the plant through the roots as well as the leaves and bark. It is several times more active biologically than the phenoxy herbicides. Its different mode of action and greater mobility within the plant give a higher degree of brush and vine control with Banvel 4-W.S. dicamba alone or with Banvel dicamba plus phenoxy mixtures than with phenoxies used alone.

Banvel 4-W.S. dicamba not only controls those brush species controlled by 2,4-D and 2,4,5-T, but also controls many species not controlled by phenoxy chemicals, such as evergreen species and suckering hardwood species. There are no other herbicides in commercial use that outperform Banvel 4-W.S. for control of brush and vines.

Because Banvel 4-W.S. dicamba translocates, it gives a more complete kill, even though the entire plant is not sprayed. Other herbicides may merely suppress. Therefore, Banvel 4-W.S. is more effective on the toughest weeds, trees and vines that have the deepest or most extensive root system. Translocation of Banvel 4-W.S. herbicide through the plant system eventually gets to the roots.

Q. I put out Banvel-510 herbicide in September as a basal application, according to your label directions. Brush browned out very well, but in June the next year, some trees started to leaf out. Does this indicate partial failure?

A. It's true that elm and certain other species often leaf out during the first growing season. However, Banvel-510 herbicide usually gives complete kill in the second growing season after the application. Translocation takes time. Chemicals that give immediate, first-year brownout do not necessarily give third-year kill, so that you have to spray more often. Full benefit of Banvel-510 herbicide, its ultimate effect, is in the third year.

Banvel 4-W.S. dicamba by itself, applied to brush, is slow in giving brownout. With some species brownout is never achieved, as leaves curl and fall without turning brown. With the addition of 2,4,5-T brownout is faster, occurring within two to four weeks after application. The addition of Accutrol® adjuvant will increase penetration and absorption of the chemical.

Some species take longer to die than others. For a few, it will be 18 to 24 months from time of application.

In short, this means that you spray on a three- to five-year cycle . . . you seldom have to go in again sooner than three years.

Q. My management has made a decision not to use 2,4,5-T for brush control. Do you have a product I can use that does not contain 2,4,5-T as a basal application to control brush?

A. Yes, for sure. Banvel®-520 herbicide, containing one pound dicamba and two pounds 2,4-D per gallon, controls a broad spectrum of brush. Why don't you give this formulation a good test? But, if you feel that it is not doing the job as expected, call Velsicol on the Banvel "Hot Line" free of charge. On certain species, Banvel-520 herbicide proves effective but works more slowly than Banvel-510 herbicide.

Q. We use some pellets in our vegetation control program for brush and vines. Does Velsicol manufacture a Banvel dicamba pellet?

A. Yes, Velsicol sells Banvel® XP pellets, containing ten percent dicamba in clay. It is applied by hand or mechanical applicator, scattered uniformly on the ground under the tree, within six inches of the trunk. Banvel XP dicamba leaches to the roots where it is taken up and translocated throughout the tree, destroying growth tissue as it goes.

Q. I've been using 2,4,5-T on poplar, sumac, chokecherry, locust, sassafras, aspen, and persimmon with good kill the first year. But right now, about two years after, these areas are thick with root sprouts. Would this happen if I used the right Banvel dicamba plus phenoxy formulation?

A. Not at all likely. Banvel herbicide combined with a phenoxy kills dormant buds and gets absorbed by the roots of these trees as well as through the leaves and bark, to put a sure end to root suckering. As long as you get good coverage around the crown of the plant, you will get good brush control. Banvel-510, containing 2,4,5-T, is recommended, unless you have an environmental restriction against 2,4,5-T. If so, then you may be able to use Banvel-520, containing 2,4-D. Lower in cost than Banvel-510, Banvel-520 does not control quite as broad a spectrum of brush species, especially maple.

Q. Environmentally, how does Banvel dicamba compare with other brush control chemicals?

A. The table shows a comparison of Banvel dicamba with other brush control chemicals.

ENVIRONMENTAL COMPARISON OF BRUSH AND WEED CONTROL CHEMICALS

	BANVEL	2,4-D	2,4,5-T	TORDON
Chemical Toxicity (acid) oral LD_{50} over 2500 mg/kg	Yes	No	No	Yes
EPA Federal Label Approval on Pasture and Rangeland	Yes	Yes	Yes	*
Waiting Period Between Treatment and Grazing:**				
Beef Cattle	No	No	No	*
Dairy Cattle	Yes	Yes	Yes	No
Federal Residue Tolerances Established on:				
Pasture Grass	Yes	No	No	*
Crops	Yes	No	No	No
Milk	Yes	No	No	No
Soil Persistence Half-Life	25 days	4 days	20 days	100+ days
Ditch Bank Application (registered label)	Yes	Yes	No	No
Controls Both Hardwood and Softwood Species	Yes	No	No	Yes

*EPA registration for use in Texas.
**Read all labels for limitations on harvesting hay and slaughter restrictions.

Every vegetation control program has unique requirements.

To help you overcome your particular problems, Velsicol maintains a toll-free telephone that you may use . . . all year round

BANVEL HERBICIDE "HOT LINE"

DIAL (toll free):
800-621-4129
Illinois Callers: 800-972-8381

between 9 a.m. and 4 p.m., Monday thru Friday. Calls made outside of these hours will be automatically recorded and answered within 48 hours by phone or mail.

Just cut out and tape on or near your phone for handy reference.

Note: Before using any pesticide, read the label.

BANVEL® Herbicide from VELSICOL

VELSICOL CHEMICAL CORPORATION
341 East Ohio Street, Chicago, Illinois 60611
Velsicol is a subsidiary of Northwest Industries, Inc.

Species to use	Pounds of pure live seed per acre
Big Bluestem	2.0
Little Bluestem	1.2
Indian grass	1.0
Side-oats grama	0.8
Switch grass	0.8

He adds: "The seeding rate can be easily doubled to about 60 pure live seeds per square foot if more stand reliability is required. Thirty pure live seeds per square foot is a minimum seeding."

Prepare the ground by fall plowing if feasible, or if ground is torn up by construction, kill spring weeds by disking and harrowing. My own experience indicates that seeding with a Nesbitt drill is a great help, but hand seeding small areas or using a cyclone seeder will work. Drilling (mid-May to mid-June probably best) gets the seeds down in contact with the soil and requires less seed for a satisfactory stand than the other methods mentioned. Roadside seeding can also be done with the usual hydro-seeding equipment. A minimal seeding of twenty-eight live seeds per square foot produced rather amazing results on some poor soil (B horizon) of a roadside borrow-pit planting done under Christiansen's supervision. After three years few weeds were apparent, and the prairie species seemed to have things under control.

Another application of prairie grasses by Dr. David Lyon and Christiansen at Mt. Vernon, Iowa, is the seeding of a "Nature Park" overlooking a quarry that has been cleverly made into a lake. The "palisade" effect of quarry walls furnishes fascinating texture and remarkably effective isolation from nearby traffic sounds. Trails through the grass reveal delightful surprises as one finds various flowers in bloom. As the trail emerges on the quarry rim, varied peaceful vistas of blue water are opened, altogether a winsome invitation to absorb the beauty of nature in many forms.

A great little book to help you learn more about prairie grasses as a tool for low maintenance beautification is **Prairie Propagation Handbook,** ($1.25, Boerner Botanical Gardens, 5879 South 92nd Street, Hales Corners, Wisconsin 53130).

Another book, less technical but dramatically beautiful, tells in eloquent prose and full color photos the startling (true) story of prairies and their effect on our lives. This hauntingly persuasive book, **Grass Lands,** is published by Wide Skies Press, Polk, Nebraska 68654. Text is by Jim and Alice Wilson, photos by Steven C. Wilson. They know what they are writing about: they own Wilson Seed Farms at Polk. Incidentally they are a good source of seed of grasses and prairie flowers as well as a great deal of helpful information. They sell the book ($2.35) but they'll give you enthusiasm.

Considering current oil and related petrochemical shortages, all used for roadside maintenance programs, we'd best give the use of prairie grasses and flowers our best thought. □

Changing seasons also mean changing colors for most species of prairie grass.

Short-clipped brome grass, typical treatment for most roadside maintenance programs.

Lakeshore | bags it!

NITROFORM*

organic nitrogen

The concentrated organic that takes up less storage space. Pathogen-free and odorless, too.

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NEWS *(from page 30)*

reproduce them in courses built in this country.

When earth-moving was required to provide interest and variety, the natural hills, valleys and windblown bunkers of Scotland were imitated.

"Today," Graves said, "we attempt to blend the historic with modern technology to provide a beautiful golf course that provides a fair challenge, yet can be easily maintained with modern equipment."

The American Society of Golf Course Architects is comprised of the leading golf course architects in Canada, Mexico and the United States.

Velsicol Requests Hearing On EPA's Proposed Action

Velsicol Chemical Corporation has announced that it will request a public hearing regarding the Environmental Protection Agency's proposed action toward two of its products, chlordane and heptachlor insecticides.

In late 1974, the EPA announced its notice of intent to cancel certain registered uses of the two products. The proposed cancellation does not affect use of chlordane or heptachlor for subsurface ground insertion for termite control and the roots or tops of nonfood plants.

Sales of chlordane and heptachlor are not limited during the cancellation proceedings.

The EPA stated that chlordane and heptachlor appear to "pose an unreasonable risk to man," but that "these risks require further definition. Public hearings should allow all pertinent evidence to be brought forth . . . and both the risks and the benefits may be more fully developed."

We anticipate a thorough and fair public hearing, said Robert M. Morris, Velsicol president and chairman of the board. "We firmly believe these products are important to the American people — especially to the American farmer. These hearings will allow us to present the EPA with evidence of the safety and efficacy of chlordane and heptachlor, so that current registrations may be sustained."

Freeport Minerals Raises Sulphur Price, Opens Mine

Freeport Minerals Company recently announced a $6 per ton increase in its domestic sulphur prices and also a planned $18 million program to reactivate an offshore sulphur mine in the Gulf of Mexico to help relieve the current sulphur shortage.

The mine, Caminada, was shut down in 1969 after sulphur prices began a long decline. A relatively high-cost operation, it is a sister mine to Freeport's nearby Grand Isle, the first and at present the only offshore sulphur operation in the world.

Recent price improvements in sulphur are helping make possible the reopening of Caminada and are

(continued on page 40)

GRASS

When you talk GRASS, you're really talking about a combination of several important characteristics.

Strong disease resistance. Aggressive root development. Good color. Excellent turf performance.

At E. F. Burlingham & Sons, we know. Because we've spent the last 70 years continually upgrading and developing new and better varieties for your use.*

The results speak for themselves. In 1962, a distinctively new Kentucky Bluegrass variety was developed through a special breeding project at Rutgers University. The name of the Bluegrass: Bonnieblue.

We recognized its potential and conducted further testing. In trials across the country over a 5-year period, Bonnieblue consistently ranked among the highest in overall turf quality.

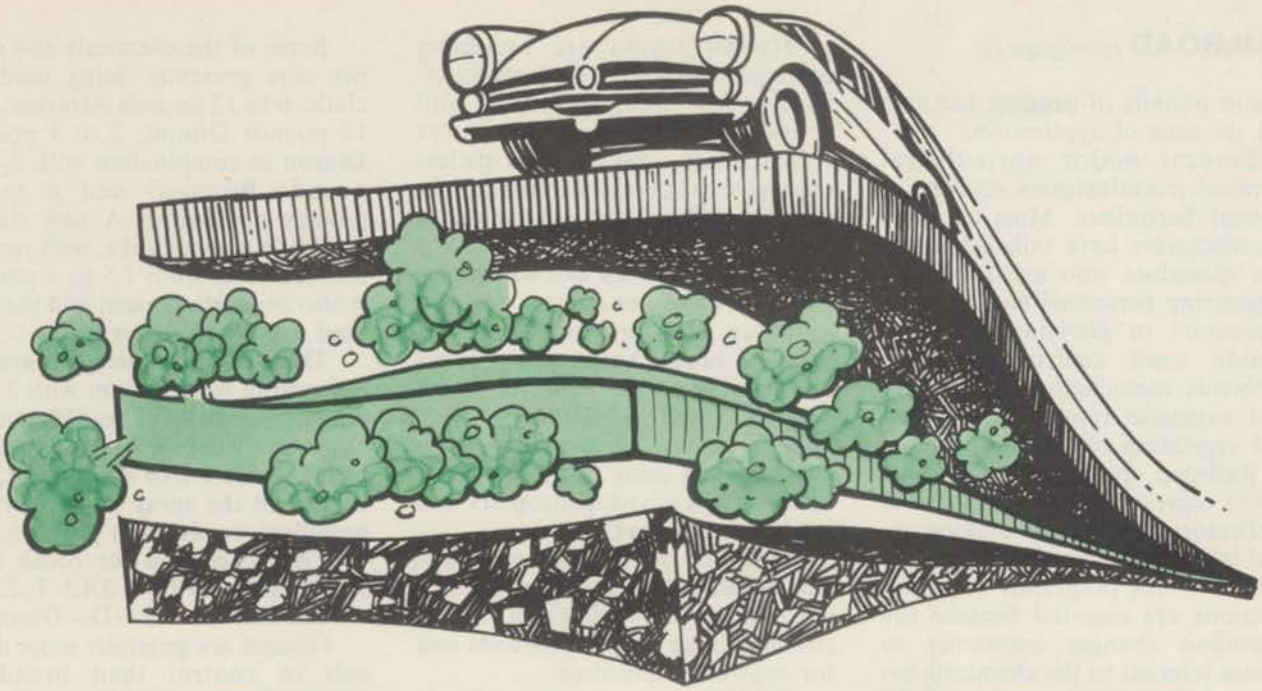
It proved to maintain a rich dark green color over a long growing season. Showed good rhizome and tiller development. Low growth with excellent density. Best of all, a good resistance to leaf spot, stripe smut, rust and snow mold.

Bonnieblue from E. F. Burlingham & Sons. Just one of many reasons why... when you talk about GRASS, you talk about Burlingham.

E. F. Burlingham & Sons, P.O. Box 217, Forest Grove, OR 97116. Phone: (503) 357-2141; Telex: 36-0274; Cable: Burlingham.

E. F. BURLINGHAM & SONS

*Bonnieblue, Majestic, Sydsport and Birka Kentucky Bluegrasses and Koket Chewings Fescue.



Put a "gas blanket" between you and weed breakthrough.

CASORON® – for years leader in orchard, nursery, landscaping and industrial weed control – is *now approved for use under asphalt.* Use it where weeds and roots do the most damage: recreational courts, bicycle and golf cart paths, paved sidings, airport runways, parking lots, etc.

Works like nothing you've ever used before. Applied as a granular or wettable powder over the subgrade, CASORON soon begins to emit a weed-killing gas. Once the asphalt is applied, it traps the gas creating a long time blanket and protection against weed growth and weed breakthrough.

Why CASORON instead of sterilants: Simply because you can effectively kill weeds and stop root growth without risking damage to adjacent ornamentals. CASORON is a root inhibitor, ornamental roots will stop growing as they contact the gas blanket. They won't systematically translocate the herbicide. And they won't erupt through the blanket into the asphalt. Also, CASORON's blanket of protection stops weeds from germinating – but won't sterilize areas for future planting. *Other uses:* CASORON is highly effective around right-of-ways, curbs, landscaped areas and fences. Over 60 perennial and annual weeds and grasses can be controlled.

If asphalt is in your plans for the future, specify CASORON. It's a gas. 4-4891

CASORON
DICHLOBENIL WEED & GRASS KILLER

T-H

THOMPSON-HAYWARD CHEMICAL COMPANY
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Kansas City, Kansas 66110

For More Details Circle (127) on Reply Card

RAILROAD *(from page 12)*

rate in pounds of product per acre and the time of application.

Several major agricultural chemical manufacturers market industrial herbicides. Most of these manufacturers have railroad herbicide specialists who assist railroad engineering personnel and contract applicators in planning and conducting weed control programs. Herbicide manufacturers also conduct extensive research on industrial vegetation control.

Railroad personnel, manufacturer's representatives and contract applicators cooperate in making annual inspections to check the results of the various programs. These inspections are essential because the vegetation changes constantly to species tolerant to the chemicals being used. Spray programs have to be adjusted every year so chemicals that will control resistant species are used.

There are four national contract applicators and a number of regional contract applicators. These companies have specialized railroad spray equipment including hy-rail trucks and railroad spray cars. The spray cars are used with several tank cars and are pushed by a regular locomotive.

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The organic nitrogen that saves you labor, equipment use, and time . . . because it's so long-lasting. Try it.

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Hy-rail trucks are becoming more popular and are especially effective for spraying yards and branch lines. They use lower volumes than spray cars and are less expensive to operate. Railroad spray cars are still efficient on mainlines and in wide open territory where it is possible to spray up and sometimes over 100 miles per day.

Spray cars are also used for spraying brush, however, hy-trucks are starting to be used for brush control as well as helicopters. High volume sprays are used for brush control when using spray cars while hy-rail trucks and helicopters use low volume sprays.

Contract applicators also distribute herbicides for railroads doing their own spraying and formulate herbicides for the railroads and for contract application.

Residual or soil active chemicals require precipitation to activate them; however, extensive precipitation will leach residual chemicals out of the root zone and reduce their effectiveness. Consequently, time and amount of rainfall are important considerations when determining the time of application. In the semi-arid West most of the rainfall is in the fall and winter months and application is made in the arid northern states such as eastern Oregon, southern Idaho and southern Utah in the fall, while warmer semi-arid areas such as southern California are usually sprayed during the winter months.

Higher rainfall areas including most of the central and eastern U. S. are sprayed in the early spring with a combination of residual, contact and systemic herbicides. This allows for later application than with residual chemicals alone and reduces losses due to leaching.

Distributing application over several months also helps utilize personnel and equipment.

Present programs call for relatively low rates of contact herbicides; consequently, it is important to spray early in the spring before the vegetation gets too large.

Originally all railroad chemical vegetation control was with contact herbicides; however, since the introduction of residual herbicides, the trend has been to less use of contact herbicides and more residual herbicides which give longer lasting results.

Some of the chemicals and rates per acre presently being used include: 6 to 12 pounds Atrazine, 6 to 12 pounds Diuron, 2 to 4 pounds Diuron in combination with 2 to 4 pounds Bromacil and 6 to 12 pounds prometone. A new chemical, trade named Spike, with recommended rates from 1.5 to 4 pounds is also being introduced into the railroad market this year.

These residual chemicals are being used in combination with 2 to 3 pounds Amitrol, 75 to 150 pounds chlorate borate, or 6 pounds MSMA. Also, 2 to 4 pounds 2,4-D is used in the spray mixture where broadleaf weeds are a problem.

Chemicals used for brush control include: 2,4-D — 2,4,5-T; 2,4-D —Picloram and 2,4-D—Dicamba.

Grasses are generally more difficult to control than broadleaf weeds. Some difficult to control grasses prevalent on railroad right-of-ways are inland saltgrass, big bluestem, prairie cordgrass, johnsongrass and bermudagrass. Annual grasslike weeds are usually controlled with regular spray programs; however, foxtail, and crabgrass often germinate late in the season after the residual herbicide has been leached down. Downey bromegrass is easily controlled but is prevalent outside the regular pattern and is the cause of many railroad fires. Horsetail is one of the most difficult to control species prevalent on railroads.

Swamp smartweed, hemp dogbane and common milkweed are some of the most difficult to control broadleaf species. Various vines are a serious problem on railroads in the southern United States.

Although annual broadleaf weeds are relatively easy to control, when they are not controlled they are very troublesome because of their size and rapid growth. Kochia is the most troublesome broadleaf species. Russian thistle is also prevalent on railroad right-of-ways in the western U. S.

Brush or woody plants are a serious problem in the eastern and southern U. S. It is not only necessary to keep brush out of pole lines, but also at least 20 feet back from the outside rail. Brush is also a problem in the Pacific Northwest; here blackberry brambles are the most serious problem. □

SIX STROKE-SAVERS FROM DOLGE

1 **TOTE** non-poisonous weed killer for use where no growth whatsoever is wanted. Kills annuals, biennials, perennials on parking lots, drives, walks, gutters, courts. Finishes roots, stops seeds, sterilizes soil. 40 gallons of Tote in 60 or more of water cover a whole acre

2 **E.W.T.** selective weed-killer finishes broad-leaved weeds—kills dandelions, plantain, mouse-eared chickweed, even poison ivy—does not harm good grasses. Amine formulation: non-volatile; does not "jump" to flower beds or shrubbery.

3 **PENETRATE** natural, organic soil improver. Works through compacted soil; lets air, water and nutrients go deeper. Promotes deeper, stronger root growth. Encourages vigorous, beautiful turf, shrubs, trees. Prevents soil erosion and puddling of surface water. Speeds germination of wanted vegetation.

4 **LAKE DYE** a safe, non-toxic blue water dye for lakes, ponds, water hazards. Colors to shade of blue you desire. Apply 2 pounds to the acre, 4 to 5 feet deep. Harmless to wild life—swans, ducks, geese, fish, frogs. Harmless to grass too. Compatible with fungicides, insecticides, turf chemicals.

5 **DOLGE ANTI-DESSICANT** protects turf grasses and broad leafed evergreens against drought and snow. Allows plants to breathe, yet prevents loss through water transpiration. Guards against summer scald and plant shock, too.

6 **BOOST** detergent-degreaser for machinery. Spray or mop it on mowers, tractors, carts; hose off: clean! In the clubhouse, Boost is a real handyman for extra-heavy cleaning jobs. Great on concrete floors.

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For More Details Circle (123) on Reply Card

NEWS *(from page 36)*

prolonging the life of existing sulphur mines, according to the company. Freeport pointed out that reactivating Caminada — which is contingent upon securing the necessary natural gas supply — will cost not much less than Caminada's entire original cost of $23.7 million in 1968.

Freeport also announced that, on the strength of higher prices, it had launched a new sulphur exploration program in Louisiana.

Forest Service Man Cited For Tree Decay Research

Dr. Alex Shigo, a U.S. Forest Service researcher known for his contributions to the understanding of discoloration and decay in living trees, has been honored by the American Phytopathological Society.

The award of Merit of the Northeastern Division of the Society was presented to Shigo of the Northeastern Forest Experiment Station, Durham, N.H., at a recent Society Meeting in N.Y.

Shigo's work has changed the whole concept of discoloration and decay, and has uncovered the succession of micro-organisms and their locations within developing columns of decay. He has also worked on development of a meter — named a "Shigometer" in his honor — that helps eliminate the educated guesswork involved in tree replacement.

Shigo is also well-known for his ability to explain his research in a manner that is understandable to the average homeowner, home builder and lumberman.

For turf. Any turf.

3-D Weedone.

A special blend of three herbicides in one that turns a fairway or a front lawn into beautiful, weed-free turf.

It's powerful. It contains 2,4-D, the standard, time-tested broadleaf herbicide that controls most common turf weeds. Plus Dicamba, to broaden its control to more than 100 species of weeds and woody plants.

It's fast. Silvex speeds up the whole weed-control process and gives you added, effective control over chickweed, clovers, and other tough weeds.

It's professional. Yet you don't have to be a pro to use it. Just mix with water, spray, and watch the weeds disappear.

Use 3-D Weedone. For great results on turf. Any turf.

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New Gravely Dealer Group Holds First Meeting In Fla.

The ten members of the Gravely Dealer Council recently held their first meeting in Florida. The Council was formed to "give Gravely dealers an opportunity to express their opinions and ideas directly to the people who are responsible for Gravely's operations and policies," according to P. W. Cayce, marketing vice president. The meeting was scheduled as a result of suggestions made during Gravely's recent dealer meetings. Representing a cross-section of Gravely dealers, the ten members discussed a wide range of topics, from the outlook for 1975 to "What manufacturers should do to help their dealers in 1975." The consensus was that Gravely dealers believed the market will be looking for quality equipment, with greater emphasis on value.

(more news on page 52)

fairway weed-no-more®

No more weeds.

A single application of trimec®-based "Fairway weed-no-more®," when young weeds are growing vigorously, will normally control the entire spectrum of those broadleaf pests the remainder of the summer.

"Fairway weed-no-more®" is our new name for "Fairway broadleaf herbicide." The product is the same. So is the way it works. Ask almost any turf professional.

Our patented trimec® formulation of 2, 4-D, MCPP and dicamba combine to make "weed-no-more" the most effective *single* broadleaf herbicide you can use. Single. One application. No more multiple sprayings with different products to control different weeds.

U.S. Patent 3,284,186

trimec TURF HERBICIDES®

"Fairway weed-no-more®" is safe. The exclusive trimec® formula greatly increases the *effect* of the component herbicides on hard to kill weeds. This allows a significant reduction in the *amount* of each chemical required, while still providing excellent control.

Damage to ornamentals, shrubs, flowers and grass is virtually impossible when label directions are followed. This includes bent, bermuda and other sensitive grasses.

"Fairway weed-no-more®."

It saves you time with single application control;

It saves your budget because a smaller amount of Fairway weed-no-more® controls the widest-known spectrum of weeds;

It saves your grass...by eliminating the competition.

No common broadleaf turf weed yet has been able to withstand proper "Fairway weed-no-more®" applications.

That's a fact.

Circle our reader service number and we'll send you additional information.

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Sewage Sludge Composting
From Waste to Resource

WAYS MUST BE found to dispose of vast quantities of sewage sludge. Disposal alternatives include dumping it in waterways, incineration, landfilling and landspreading. Landspreading is the only alternative which does not waste a potential soil-building material. Moreover, it is the only alternative possible for disposing of the 550 tons of sludge generated daily at the Blue Plains Wastewater Treatment Plant, Washington, D.C. Other communities face similar problems.

The research demonstration project at Beltsville, Md., is being conducted to show that composting can solve three major sewage sludge problems involved with landspreading: it can stabilize excessive quantities of nitrogen that might get into streams or underground drinking water, it can kill disease-causing organisms, and it can eliminate objectionable odors associated with conventional anaerobic digestion of sludge.

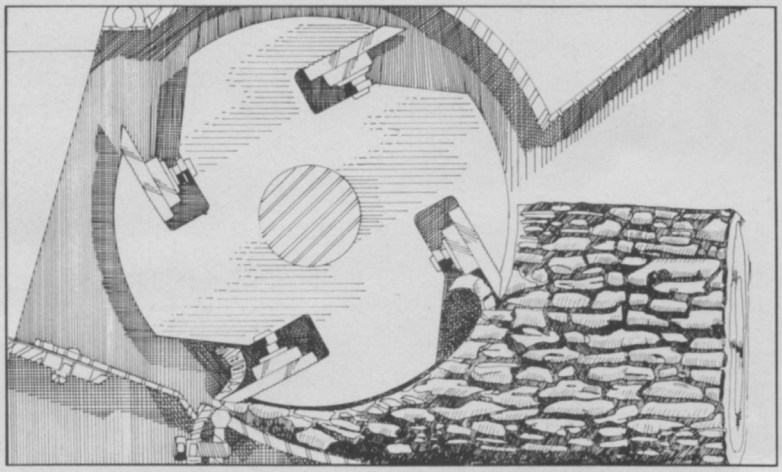
The demonstration project also shows that costs for composting 550 tons of sewage sludge per day will be less than for incineration. In addition, the studies established that composted sludge is safer to dispose of than is raw or digested sludge. In short, composting transforms sewage sludge into a product acceptable to the public.

Composting: What and How?

Composting is the natural, biological decomposition of solid organic matter. The method of composting being used at Beltsville is the windrow process. Heat produced by aerobic microorganisms warms air within the windrow. Convective forces move air through the windrow, supplying oxygen to the microorganisms.

Improper management of the composting process will result in an improper oxygen supply. For example, if the windrow is too dense, there will be no air movement. Anaerobic organisms would then take over the process, producing obnoxious odors. On the other hand, if the windrow is too porous, the air will remove heat as fast as it is produced by the microorganisms so

There's a neat angle to our chipper story.



The secret's in the rotor. Being a steel forging, rather than a vulnerable casting, it has the structural strength to permit the blades to be positioned at the precise angle for slicing. No more chopping and mangling wood. Or spending an hour or two adjusting rotor blades. Our positive V-lock design reduces adjustment time to a matter of minutes.

When you feed our new Wayne brush chipper, you get neat, uniform, commercially usable chips. Without excess vibration, friction and fuel consumption.

And, there are other advantages. Such as a disposable six-sided bed knife that lasts 50% longer than conventional flat four-edged knives, yet can be replaced for less than the cost of sharpening others. A bed plate that adjusts horizontally as well as vertically for perfect results with hard or soft wood. A circular (not square) discharge chute that telescopes to any desired height and has 360° discharge controls. And a low noise level that meets OSHA requirements under normal operating conditions. Write or call for our chipper brochure. And, if you want proof instead of words, ask for a quiet demonstration.

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Sweeper Division
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FMC Environmental Equipment

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that the compost will stay near air temperature slowing the process.

In the demonstration project, the rate of air exchange is regulated by controlling the porosity and the size of the windrow. Wood chips are used as a bulking material to increase air flow. The chips are needed because the sludge produced at Blue Plains is in a semi-fluid state (75 to 80 percent moisture). A semi-fluid sludge would not permit air movement needed for effective composting.

Composting Procedure

Wood chips are placed in a strip 12 inches deep by 15 feet wide. Sludge is distributed over the chips to an average depth of four inches. The chips and sludge are mechanically blended and formed into a windrow, which is turned over daily for 10 days. Then it is spread out to a uniform depth 20 feet wide and cultivated to air dry it for two or three days. When the moisture content has decreased to about 35 percent, fresh sludge is added and windrowed for another two weeks. The windrow is then dried again and screened to remove the chips for reuse. The screened sludge is stockpiled for an additional 30 days before it is ready for use as a soil conditioner and low grade fertilizer.

Compost as a Soil Conditioner

Organic matter improves the physical properties of the soil. Compost, which is a stabilized, partly decomposed organic matter, improves the soil structure. Like a sponge, compost will hold more water than does soil. Adding compost to a light, sandy soil increases the water holding capacity of the soil. Plants grown on these soils are better able to survive drought.

Heavy soils are generally compact, and thus have inadequate air space available for good root growth. Moreover, the compacted soil does not allow water to infiltrate, resulting in runoff and less water available for plant growth. Compost can make a heavy soil friable and loose. Water and air can move into the soil, and undesirable gases, such as carbon dioxide; move out. The loose, friable soil does not restrict root movement as compared with a compacted soil.

Thus composted sewage sludge improves soil conditions, providing a desirable environment for plant growth.

Compost as a Fertilizer

Composted sewage sludge has a fertilizer rating of about 0.9 percent nitrogen, 2.3 percent phosphoric acid and 0.2 percent potash. This means that it will take five to 10 times as much composted sludge to supply the same plant nutrients as an ordinary 5-10-5 chemical fertilizer. Because the potash level in composted sludge is very low, supplemental potash fertilization will probably be necessary. Beltsville studies show that nitrogen in composted sludge will likely be unavailable to plants unless the sludge is completely cured — that is, unless organic cellulose is screened out or decomposed.

Heavy Metals in Compost

Adding composted sludge to soil simultaneously adds appreciable amounts of heavy metals, such as zinc, copper, nickel, cadmium and lead. These metals fertilize lawns, gardens and farms.

Zinc is one of the essential trace elements needed in diets, and useful amounts of this metal are taken up by plants. Because many people would benefit from increased dietary zinc, adding composted sludge to soils would be a significant benefit.

The sludges from some cities are polluted with certain industrial metals that are toxic to crops. Crops differ widely in sensitivity to metal toxicity; vegetables are sensitive, while grasses are quite tolerant of excess amounts of zinc, copper and nitrogen.

Further, if cadmium content is high in the sludge, crops may contain enough of this metal to be hazardous for use as food or animal feed.

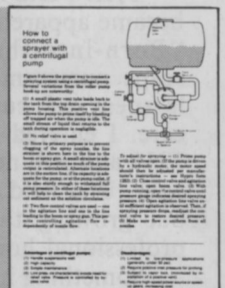
The Blue Plains composted sludge contains approximately 1,000 parts per million (ppm) zinc, 250 ppm copper, 9 ppm cadmium and

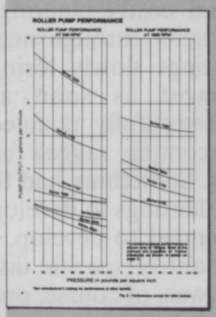
(continued on page 65)

Sprayer Pump Handbook... yours free.

18 pages of helpful information

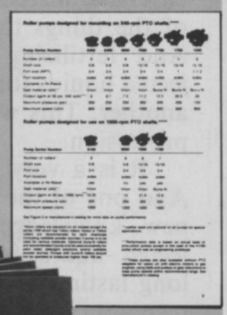
Hook up diagrams for roller, centrifugal and piston pumps.

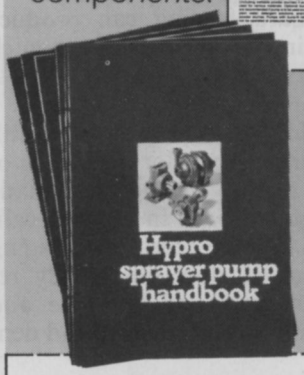




Graphs of pump outputs, flow through spray nozzles and pressure drop in hose.

How to select the right pump and sprayer components.





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To Design a Better Sprayer

By RAYMOND G. HILL

THE FIRST in a chain of needs became apparent in 1954, when as a "Born-into-the-industry" landscape nurseryman, I felt the hopelessness of current horticultural care. I entered a new field, new in 1954 and still new twenty-one years later. The field of selling no plants but growing them — the field of professional horticulture.

Something had to be done about well designed and costly plantings losing their character through neglect, about plantings slowly losing their value almost as soon as planted, about beautifully planned plant masses becoming ragged by disease or insects. Something had to be done to help plantings to develop as they were intended to develop.

Spraying to control specific diseases and insects was, of course, one of the things that had to be done. And fertilizing with pressure injected liquids for quick response was another. This was a very satisfying profession.

It is a very gratifying business. And one of the gratifications is the new knowledge that pressure injected liquid feeding can produce long lasting effects as well as quick response.

Trees and shrubs examined a year following liquid feeding still showed the deep color and vigor of well fed plants. Young trees made strong growth both in top and caliper; and mature trees, even aging trees, showed slow but steady response in terms of leaf size and thickness, in color, and in head density.

Once in a while a vivid piece of evidence shows itself. With our pressure injected liquid feeding we treated a weak and chlorotic section of some thirty feet in a long hedge of wax leaf ligustrum. Soon the weak section was no longer weak but had caught up in size with the remainder of the hedge. The chlorosis was gone. A year later the treated section was the best part of the hedge, and three years later was still richer, thicker, taller and better in every way.

Our pressure liquid feeding was done heavily. From the beginning we have used water as a carrier for fertilizer — a device to put the fertilizer where we want it. It is the chemicals used that fill plant deficiencies. Dissolving the chemicals in water and pumping the solution into the root zone is a sure way of getting the chemicals into place so they can feed the treated plant. The amount of fertilizer used is about the same used in applying it dry. The amount of water used is sufficient to dilute it to a safe application point and to carry the dissolved elements into saturation of a substantial part of the soil mass. Even phosphorous applied in this ideal way is hugely effective. Effectiveness is partially due to placement and dispersion, and partially due to a favorable pH adjustment, possible only in liquid application.

Diagnosing plant ills, treating and achieving success is a fascinating new field. But there are problems too. It becomes very difficult to treat plants as individuals, as we know them to be, when you have one mixing tank and ;many separate ills to treat. It is frustrating to need many formula variations when it is impractical to change. It is costly to find a need for acidifying chemicals in treating the universal alkaline chlorosis of the Southwest. It is costly because these chemicals are corrosive to metal tanks and metal pumps. Alkaline soils like acid but metal does not! Agricultural or farm fertilizers used for economy and used in our massive amounts for effectiveness are corrosive too. Ordinary pumps were found to be short lived and ordinary tanks and unprotected trucks were soon masses of rust.

Another in the chain of needs became apparent. A machine was needed. A machine designed especially for varied horticultural work. A machine designed from the ground up to possess all the capabilities needed with problems designed out or minimized. It must have multiple tanks and a means of switching between tanks. It must be capable of spraying, or feeding or

(continued on page 62)

This ten-year-old fiberglass prototype tank mounted on a one ton truck is the result of many years of dreams, ideas and planning.

no good gypsy.

The Gypsy Moth, an insect, which is capable of defoliating millions of acres of forest, parklands and wooded residential areas annually, can be stopped. A very effective biological agent, *Bacillus thuringiensis,* (B.t.) was discovered in the course of a search for new solutions to the defoliation problem. B.t. is specific for *Lepidoptera,* like gypsy moth, tent caterpillar and elm span worm, due to the alkaline nature of their digestive systems. Almost immediately after ingestion these target pests lose their desire to eat. In other words, defoliation ceases.

B.t. is sold commercially under the trade name THURICIDE® and is available in liquid and wettable powder. THURICIDE HPC, our high potency liquid concentrate, disperses instantly in water. Easy-to-mix THURICIDE HPSC wettable powder is free flowing and non-caking, won't clog your sprayer's nozzles or screens, provides outstanding suspension characteristics. Both formulations are ideal for ground application by hydraulic spray or mist blower.

THURICIDE 16B is designed specifically as a low-volume aerial spray against many forest pests. This formulation has consistently given 75 to 90 percent foliage protection from gypsy moth caterpillars when properly applied.

Unlike toxic chemicals, THURICIDE has proven to be harmless to other living things—man, fish, wildlife, pets and beneficial insects—when used as directed. There is no health hazard or damage from drift. No harmful residues.

For all the facts about dependable, potent THURICIDE, the "new generation" insecticide, see your local distributor's salesmen or call (305) 245-0712, collect.

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SOD AND SOD PLUGS

A-20 is rated first in disease resistance and recovers fast from injury because of its vigorous rhizome growth. A-20 will do well in up to 50% shade.

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A-34 should be considered where shade is a problem together with areas of full sunlight. A-34 will thrive in up to 65% shade and grows vigorously in full sunlight.

A-20 AND A-34 ARE PERFORMANCE PROVEN FROM COAST TO COAST

University ratings on A-20 and A-34, descriptive literature, prominent job site list and nursery locations are available upon request.

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People on the Move

Merritt L. Raiford, joined Thompson-Hayward Chemical Co. as an agricultural sales representative working in the Norfolk, Va., area.

* * *

Agrico International, a division of Agrico Chemical Co., subsidiary of The Williams Companies, announces the following personnel changes: **Harvey E. O'Neill,** appointed vice president. **Frederico Zurcher,** named managing partner of Agrico Industries e Commercio Limitada in Brazil. **Kevin de Thompson,** joined the company as vice president of sales. **John D. Martens,** promoted to manager of project development. **James A. Paden,** promoted to coordinator of supply and distribution in the international marketing department. **Scott Reneau,** promoted to supervisor of market research for international marketing.

* * *

Hans Karl Reisewitz, appointed sales manager, agricultural chemicals South America, for Uniroyal Chemical, a division of Uniroyal, Inc.

* * *

John Platta, appointed creative services supervisor at FMC Corp.'s Outdoor Power Equipment Division. His responsibilities will include public relations work and creative writing for the Bolens line of lawn and garden equipment.

* * *

Isabel T. Duffy, named USDA Forest Service public information officer at the Northeastern Forest Experiment Station, Upper Darby, Pa.

* * *

Amchem Products, Inc., Agricultural Chemicals Division, has appointed two new area research representatives: **Ronald F. Spotanski,** responsible for Amchem's research and development program in Iowa and for technical supervision of the company's research farm. **David A. Austin,** has assumed technical supervision of Amchem's research farm at Greenville, Miss., and is the company's area research representative for Arkansas.

* * *

James R. Novak, joined Tri State Toro Co. as general sales manager. Tri State Toro is a specialized wholesale distributor of turf maintenance and beautification equipment and supplies.

* * *

Gene B. Anderson, named president of Energy Equipment, Inc. of Jackson, Miss., the newly-appointed Cushman golf car distributor for southern and central Mississippi and northeastern Louisiana.

* * *

Myron Bliss, Jr., named to newly-formed position of product supervisor of insecticides for the Agricultural Chemicals Division of Diamond Shamrock Chemical Co.

* * *

ProTurf Division of O.M. Scott and Sons announced the appointment of two new technical representatives who will work with golf course superintendents and other professional turf managers in Florida: **Thomas E. Hemphill,** who will be responsible for the northwestern section of the state, and **Phillip D. Holcombe,** southeastern Florida.

For More Details Circle (131) on Reply Card

The cost of weeds is growing higher.
But it's one cost you can easily eliminate.
Not just cut, but eliminate altogether.
How?
Simply by calling in a Custom Applicator,
a weed and brush control expert.
He's listed under "Weed Control Service"
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Ask him about spraying with KROVAR® I
weed killer or HYVAR® bromacil weed killer.
Both kill most costly weeds with a single
spraying each season. It's more
economical than cutting weeds all season
long. And more effective.
And no longer will weeds grow to trap
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No longer will rodents and other pests
find weeds to nest in.
No longer will weeds create
fire and safety hazards.
And no longer will weeds interfere with work.
Let a Custom Applicator eliminate weeds
and their costs in one easy spraying.
Give him a call.
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INDUSTRIAL HERBICIDES
With any chemical, follow labeling instructions and warnings carefully.

Commercial Sod Industry

Nutsedge, Aquatic Herbicide Research Results

Editor's Note: The following two articles, the results of just-completed or on-going research, were presented by the authors — both of whom are with the University of Illinois, Urbana, Ill., —at the 29th North Central Weed Control Conference, St. Paul, Minn.

Aquatic Herbicides In Irrigation Water

By ROBERT C. HILTIBRAN

AQUATIC WEEDS can present serious problems in irrigation ponds by clogging irrigation lines and pumps, interfering with play on golf courses and detracting from the aesthetic value of the landscape. Attempts at controlling aquatic weeds with herbicides are limited by the subsequent use of the water for irrigating putting greens and other turfs. This experiment was designed to evaluate the suitability of various aquatic herbicides in terms of their safety to intensively cultured turf.

The herbicides were added to barrels of water at normal treatment concentrations and the water was then applied to 'Penncross' creeping bentgrass, maintained as putting green turf, at 9.8 gallons per 30 square-foot plot (equvalent to ½ inch of irrigation). Applications were made twice in the spring study (May 31 and June 3), four times each in the spring-summer (May 31, June 3, July 29 and 30) and summer-summer (July 30 and 31, August 7 and 8) studies, and twelve times in the multiple summer study (from August 14 to September 17).

Turfgrass injury varied with type and formulation of herbicide and timing, rate and number of applications (see Table 1). No injury was observed in plots treated with any of the copper compounds, diuron, fenac, 2,4-D amine, or endothall formulations. Diquat, and 2,4-D ester were slightly to moderately injurious depending upon rate and number of applications. Silvex, dichlobenil and simazine were moderately to highly injurious resulting in complete loss of turf in some instances.

An additional consideration when using herbicide-treated water for irrigating turf is the residual toxicity of the herbicide in water. The relatively short residual activity of diquat in the aquatic environment would allow for safe use of diquat-treated water soon after treatment. In contrast, 2,4-D ester, silvex, and dichlobenil have a longer residual life in the water requiring a longer waiting period between treatment and use of the water for irrigating bentgrass turf. □

TABLE 1. Potential Hazard From Aquatic Herbicides In Irrigation Water To Creeping Bentgrass Turf

Aquatic Herbicide	Rate, ppm[a]	Hazard[b]
Copper sulfate	1 (Cu)	low
Copper-triethanolamine complex[c]	1 (Cu)	low
Diuron	0.25	low
Endothall		
potassium salt	1	low
N,N-dimethylalylamine salt[d]	1	low
mono (dimethyltridecylamine oxide)	1	low
di (dimethyltridecylamine oxide)	1	low
Fenac	2	low
2,4-D		
dimethylamine sale	2	low
butoxyethanol ester	2	moderate
butoxyethanol ester	4	moderate
Diquat	1	moderate
Diquat + copper-triethenolamine	1+1 (Cu)	moderate
Dichlobenil	2	high
	1	moderate
Silvex		
butoxyethanol ester	2	high
potassium salt + endothall[e]	2+1	moderate
Simazine	0.5	high

[a]Rates expressed as acid equivalent or active ingredient of each herbicide rather than as salt or ester formulation; [b]Hazards expressed as: low (little likelihood of turfgrass injury from use), moderate (some thinning and discoloration of turf), and high (severe injury or loss of turf); [c]Cutrine Plus; [d]Hydrathol-47; [e]Aquathal Plus.

Cultural Practices And Yellow Nutsedge

By A. J. TURGEON

YELLOW NUTSEDGE is a serious weed of lawns and intensively-cultured turfs which has increased in occurrence and distribution in recent years. Studies were undertaken to determine the effects of cultural practices and Kentucky bluegrass competition on the growth and development of yellow nutsedge.

In a greenhouse study, six yellow nutsedge plants were planted in glass-sided boxes with and without Kentucky bluegrass, and additional boxes were planted with Kentucky bluegrass alone. Half of the boxes were mowed weekly while the other half were unmowed for the first 12 weeks, then mowed weekly for the remainder of the 32-week experimental period.

Observations were made on shoot density, below-ground development and tuber formation. Nutsedge density was highest in boxes in which nutsedge was planted alone and not mowed. Mowing or competition with Kentucky bluegrass substantially reduced nutsedge density during the initial 12 weeks of the experiment. However, the combination of mowing and competi-

(continued on page 52)

◀ For More Details On Preceding Page Circle (104) on Reply Card

Installing underground utility lines and sprinkler systems can be a problem for grounds maintenance people, landscaping contractors, and golf course superintendents.

Ditch Witch would like to help.

At most sites, it's possible to make underground installations of telephone and electrical cable — even a complete sprinkler system *without* having to dig a foot of trench across your expensive turf. Ditch Witch vibratory plow equipment can do the job quickly and efficiently.

Of course, in some cases, due to the soil conditions and other factors, trenching is required.

The point is this: we've been in the service-line trencher business ever since we started it by introducing the first such equipment more than 20 years ago. Whatever your particular requirements, there's a Ditch Witch that's exactly suited to your needs.

Selling and maintaining Ditch Witch undergroud equipment is your Ditch Witch dealer's only business. He knows your area and its soil conditions, so he can help you determine the most practical and economical way to solve your problems. Let's get together!

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DITCH WITCH

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There's a trend back to low-cost three-wheelers for some types of work. Here a groundsman at Oakmont Country Club in Glendale, California pulls a long hose from one job site to another.

WHEELS *(from page 22)*

price they have some conveniences such as electric starter, automatic shift torque converter, disc brakes, high flotation tires and a 10 cubic foot bed. Optional are: reverse transmission, dump bed, larger tires, and lights. Also available are: an LP conversion model, extra seat and turn signals. Top speed is 18 miles per hour. The manufacturer is HMC, Inc. in Torrance, California.

Grounds bosses react with interest to the life cycle value analysis technique now being applied in so much government buying. It pinpoints the true annual cost of a product by adding up the original cost, plus service and maintenance costs, and then dividing the total by the number of expected years of service. There was general agreement that the life cycle value of the new type of low-cost three-wheeler utility carts worked out about as follows:

$900 original cost divided into

5 years expected life of cart	$180 per year
Oil and gas (heavy use) @ 60¢ per day for a 6-day week	180 per year
Engine replaced once ($125 into 5 years)	25 per year
Maintenance and service	70 per year
Complete cost per year for heavy use	$455

A life cycle cost per year for the more expensive three wheelers, said users, would vary substantially according to the make of cart. There was general agreement that it would average just a few hundred dollars more than for the above low-cost carts. Over a five year period this adds up and warrants including some low-cost carts in a vehicle pool.

Larger savings, of course, come when any type of cart carries a man (and tools) who otherwise would walk or be chauffered; then labor savings could well run over a thousand dollars per year per cart. □

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DRIFT *(from page 16)*

"When we are spraying along roadsides, we have wind movements created by traffic flow. A passing truck will create enough wind to knock over "men working" signs, or blow the hat off a man working along the side of a shoulder," says Crenshaw. "We would lose a lot of chemical from our target area because of this, and a drift inhibitor helps minimize this problem," he adds.

Crenshaw says his crews are getting a better kill on weeds with a drift inhibitor included with the sprays. "We are spraying the same amount of chemical, but we are doing a better job because we are getting more chemical on the target area," he explains.

"Another surprise we didn't expect is that we also seem to get a better kill with our herbicides after a rain with a drift additive included," says Crenshaw. "The herbicides tend to stick to the plants better."

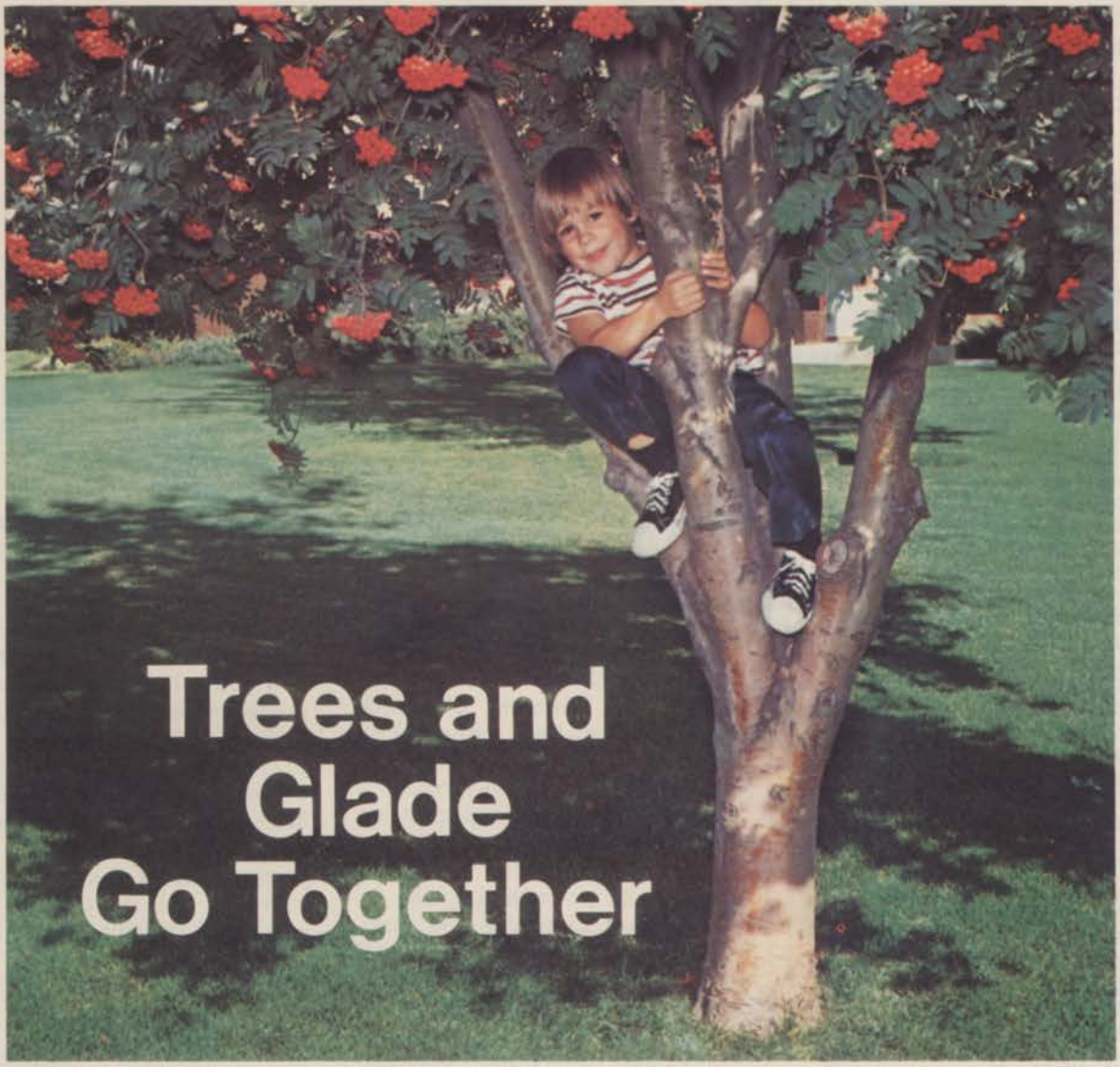
Crenshaw said that if it would rain in the afternoon after his crews had been out spraying all morning, most of the work had been wasted. The chemicals would wash off the plants. "But since we have been using a drift additive, rain hasn't seemed to affect us any," he says.

The biggest value of adding something to control drift is the extra margin of safety, says Crenshaw. "You can put the chemicals where you want them in spite of winds when we normally wouldn't have been working."

"Before we began using Lo-Drift, we would not spray anything when the wind had reached six mph. But with the additive we can spray in winds of 10 to 12 mph," he explains.

Crenshaw says there were many spraying operations that they couldn't do because of drift. "We never sprayed along roadsides where there was a danger of harming a farmer's crop with chemical drift. Once this year we accidently sprayed along a man's tomato patch with 2,4-5T where just the fumes from the product will kill tomatoes. But we had included a drift additive with the spray and we did not harm the tomatoes at all," he reported.

(Editor's Note: Amchem does not recommend spraying at high wind velocities.) □



A new natural team, Glade Kentucky bluegrass and trees! Glade performs well in moderate shade, especially when mixed with fine fescues. A selection from Rutgers University (tested as P-29), Glade is an improved, low-growing, medium to dark green grass with fine leaf texture and thick, rapid-growing rhizome and root system. Glade has good resistance to important turfgrass diseases including powdery mildew.

Like boys and trees, Glade and shade go together. Mixed with other elite bluegrasses and fine fescues in moderate shade, Glade is a natural.

Get new Glade at local wholesale seed distributors.

Glade

KENTUCKY BLUEGRASS

Another fine product of Jacklin Seed Company

U. S. Plant Patent 3151

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Mr. Sod Grower!

Business off? Sales Down? Building slump causing you to slump too?

HERE IS SOMETHING TO CONSIDER!

There are hundreds of thousands of old homes in communities with sparse thin lawns because of shade too dense for most grasses. There are also hundreds of thousands of old Merion, Windsor and other type lawns that have become so badly infested with smut and other grass diseases, they are hopeless, or at best difficult to cure or control. Most of these old lawns are in well established communities where people want the best and have the means to purchase the best.

Why not go after this lucrative market which is not affected by a building slump, high interest rates or inflation? You can do so by becoming a franchised grower of Warren's A-20 and A-34 Kentucky Bluegrasses and other Warren grasses to be released as patents are issued.

Warren's A-20 is rated high for over all performance and disease resistance by research organizations doing turfgrass research.

Warren's A-34 is rated highest for shade tolerance by the same research people.

When you become a Warren Franchise or Associate Grower, you place yourself ahead of competition with better products, not available to your competition . . . and here is something else to consider . . . in 1974, when our competitors were reporting sales off as much as 50%, Warren's Turf Nursery's sales were running ahead of 1973. The reason . . . golf courses and athletic institutions all over the northern half of the U.S.A. were installing A-20 on tees, and athletic fields. Architects were writing specs for Warren grasses and owners of old homes were ripping out old lawns and installing A-20 or A-34. All because these people wanted the finest lawn areas available. You too can enjoy this Business when you become a Warren Associate Grower.

Warren proprietory grasses are now produced in 15 states and in England, Scotland and France. There are a few territories still available.

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NUTSEDGE *(from page 48)*

tion with Kentucky bluegrass held the nutsedge population virtually in check.

This same effect was observed eventually in the previously unmowed boxes in which mowing was initiated after the twelfth week. By the twenty-eighth week, nutsedge density in these boxes was at six or less plants per box.

Visual observation of the below-ground development of nutsedge revealed considerable rhizome formation in boxes in which nutsedge was planted alone and not mowed, while very little rhizome development was evident where mowing or competition with Kentucky bluegrass were factors.

Tuber development was zero in mowed boxes and substantial in the unmowed boxes. However, competition with Kentucky bluegrass sharply reduced the amount of tubers produced.

In a field study, yellow nutsedge was planted in plots of Kentucky bluegrass turf and maintained at ¾, 1½ and 3 inches cutting heights, and fertilized at rates of 0, ½, 1 or 2 pounds of nitrogen per 1,000 square feet per month from May to October. The highest nutsedge density occurred in plots maintained at ¾

(continued on page 61)

NEWS

(from page 40)

Diamond Shamrock Corp. Introduces Liquid Daconil

The Agricultural Chemicals Division of Diamond Shamrock Corporation has announced production of Daconil 2787® Flowable Fungicide in liquid form.

This flowable, broad-spectrum fungicide, which is said to be just as effective as the Daconil W-75 wettable powder formulation, can be used on over 25 species and varieties of grass and many ornamental plants for control of a number of diseases including dollar spot, helminthosporium leaf spot and melting out, copper spot, gray leaf spot and stem rust of bluegrass.

When preparing Daconil 2787® for application, it should be remembered that one pint of the new flowable is equal to one pound of the wettable powder formulation.

According to the manufacturer, Daconil 2787® Flowable Fungicide disperses quickly, requires a minimum of agitation, exhibits excellent turf tolerance even in hot, humid weather and provides excellent coverage and exceptional residue protection. For more details, circle (709) on the reply card.

Maryland Sod Conference To Study Current Troubles

Current problems of the Maryland sod industry will be the focal point of the 10th Annual Sod Conference to be held March 6 at the Adult Education Center, University of Maryland, College Park, Md.

A panel discussion on current sod marketing problems will highlight the conference, according to John R. Hall, extension turf management specialist from the University of Maryland.

Featured panelists will include Steward Knudson, president of Maryland Homebuilders, and Jack Foley, president of the Montgomery County Board of Realtors, who will talk on current housing needs and the situation as he fore-

(continued)

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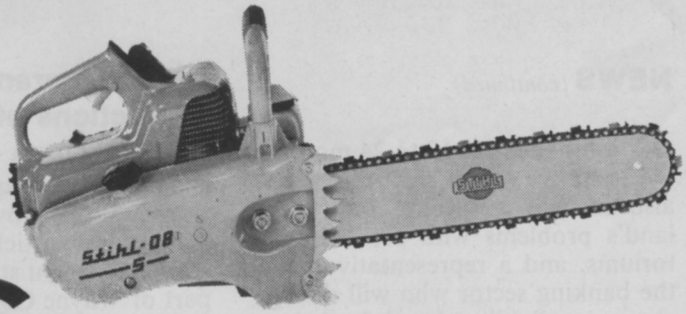

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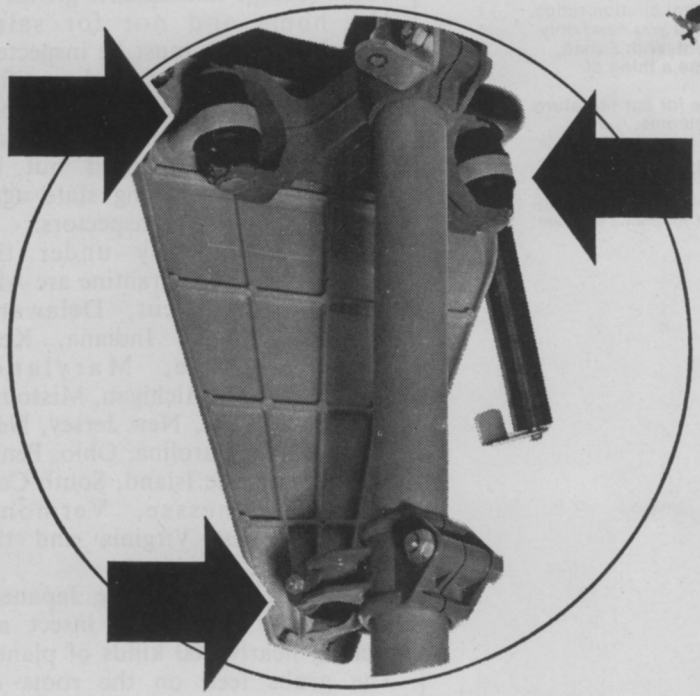
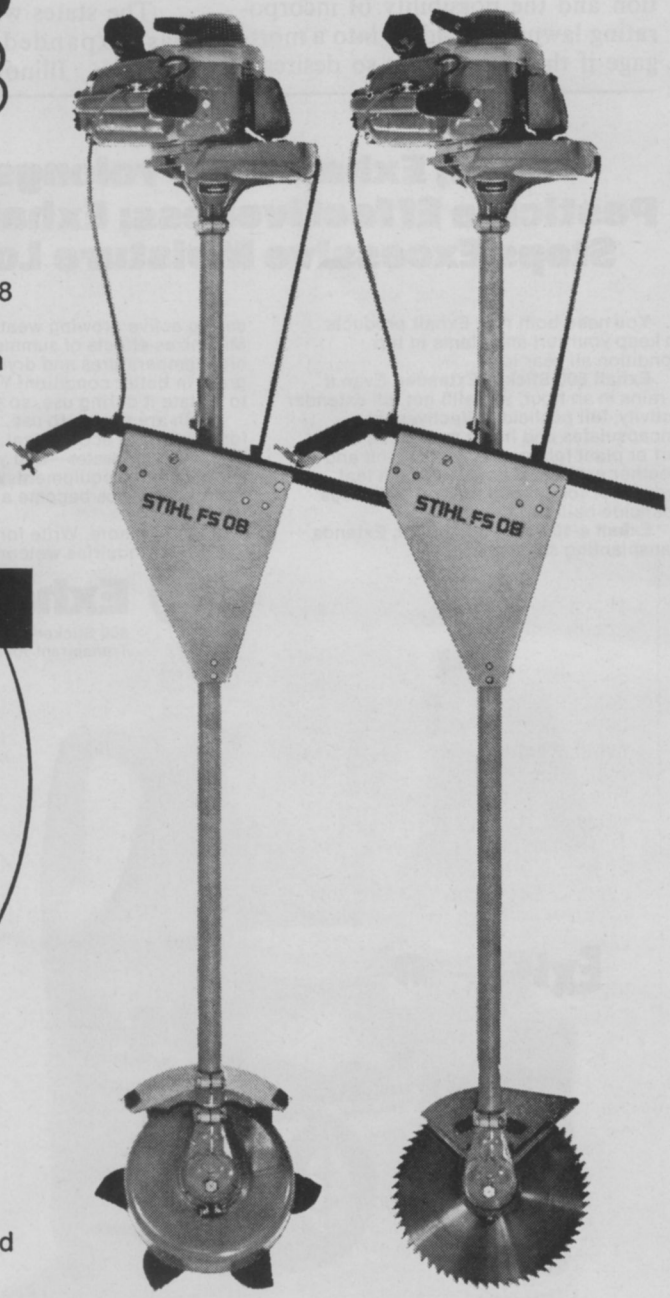
STIHL FS 08

A perfect pair: The versatile STIHL 08S big power chain saw and the handy new, lightweight STIHL FS - 08 Brush Cutter. The same high performance engine powers them both. The FS - 08 Brush Cutter does a real professional job in tough weeds, stubborn shrubs and small trees when using either the blade with rotating knives or





circular saw. **This brush cutter features STIHL's famous AV anti-vibration system that absorbs fatiguing engine vibrations.** Lets you cut longer and easier with less effort.

Ask your rental friends or your nearest dealer about STIHL'S better performance, lower maintenance & down-time and proven earning capacity.

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sees it for the next 12 to 24 months.

Tentative plans for the panel also include a speaker on Maryland's problems with sewer moratoriums, and a representative from the banking sector who will discuss money availability for sod production and the possibility of incorporating lawns or sodding into a mortgage if the homeowner so desires.

Beetle Quarantine Expanded In Sections of Eight States

The USDA has extended Japanese beetle quarantine restrictions on the movement of certain agricultural articles to additional sections of eight states, and removed part of Wayne County, Mich., from regulation.

The states where the quarantine was expanded were Alabama, Georgia, Illinois, Indiana, Kentucky, Ohio, South Carolina and Tennessee, according to T. G. Darling, acting deputy administrator for Plant Protection and Quarantine Programs in USDA's Animal and Plant Health Inspection Service (APHIS).

"Whan a Japanese beetle outbreak is discovered," said Darling, "the entire state or states involved are brought under federal quarantine, but movements of goods are restricted only in those parts of the states and counties that are actually infested. This procedure insures that individuals and industry in quarantined but uninfested areas are not subjected to unnecessary restrictions."

Articles regulated under the quarantine include soil, grass sod, plant crowns and roots for propagation, bulbs, used mechanized soil-moving equipment and plants with roots (except houseplants grown in the home and not for sale). Regulated items must be inspected, treated if necessary, and certified "pest free" before being shipped from infested to uninfested areas. Inspections are carried out by APHIS or cooperating state agricultural quarantine inspectors.

States currently under the Japanese beetle quarantine are Alabama, Connecticut, Delaware, Georgia, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia and the District of Columbia.

Darling said that the Japanese beetle is a destructive insect attacking nearly 300 kinds of plants. The grubs feed on the roots of grasses and turf. Adult beetles feed on flowers, shrubs, trees, fruit and field crops such as corn and soybeans. "They can damage plants and small trees in a relatively short time," he said.

The amendment to the federal Japanese beetle quarantine took effect upon publication in the Federal Register, Jan. 7. Copies may be obtained by writing to Plant Protection and Quarantine Programs, APHIS, USDA, Federal Building, Hyattsville, Md. 20782. □

(more news on page 58)

Now, Exhalt800 Prolongs Pesticide Effectiveness; Exhalt4-10 Stops Excessive Moisture Loss.

You need both new Exhalt products to keep your turf and plants in top condition all year long.

Exhalt 800 Sticker-Extender. Even if it rains in an hour, you still get full extender activity, full pesticide effectiveness. Encapsulates and holds pesticides on turf or plant foliage; stops wash-off and weather erosion. Even flexes with leaf growth for longer action! And it reduces pesticide build-up in the soil.

Exhalt 4-10 Anti-Transpirant. Extends transplanting season, even during active growing weather. Minimizes effects of summer droughts, high temperatures and drying winds. Keeps grass in better condition! You don't have to agitate it during use, so you save time.

Both are simple to use. Both formulated for economical dilution ratios. Both mix with water—and you need only water to clean equipment. With Exhalt, messy clean-ups become a thing of the past.

Find out more. Write for our literature. Distributor inquiries welcome.

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Federal Agencies Launch Joint Attack on Forest Pests

FOUR USDA AGENCIES are launching a multi-million dollar attack on three forest pests, announced Robert W. Long, assistant Secretary for Conservation, Research and Education.

The targets of these accelerated research programs, which may continue as long as five years, are:

- Douglas fir tussock moth, currently defoliated nearly 800,000 acres in Washington, Oregon and Idaho with potential losses estimated at some $30 million.
- Southern pine beetle, periodically epidemic in over 60 million acres of commercial pine forests in Texas, Arkansas, Mississippi, Alabama, Georgia, North and South Carolina, Tennessee, Virginia and Louisiana, with a 1973 loss of enough timber for 48,000 homes.
- Gypsy moth, on the increase in the eastern U.S. since 1968, threatening a major hardwood resource by defoliation which in 1973 alone covered 2,800 square miles and continues to spread.

Four USDA agencies — Agricultural Research Service, Animal and Plant Health Inspection Service, Cooperative State Research Service and Forest Service — are combining their resources in an effort to find new weapons in the drive to control the three pests and reduce their damage.

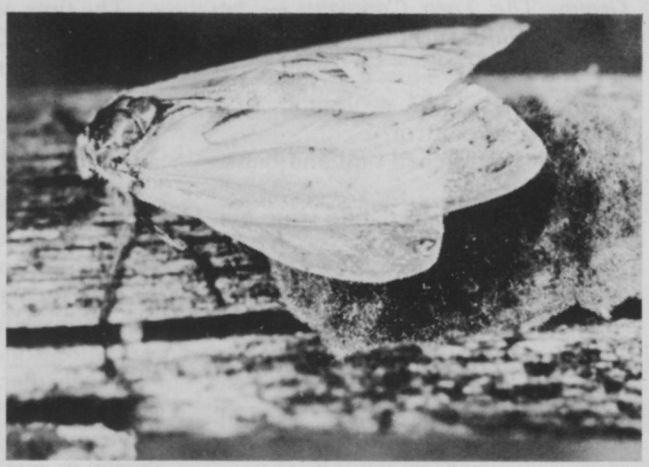
Techniques under consideration include the following: safer, more effective toxicants which kill the pests; microbials which cause diseases of the harmful insects; behavorial materials such as sex attractants that lure males away from females or materials which inhibit insect feeding; naturally-occurring enemies which prey on the threatening insects or parasitize their eggs; and sterile male techniques, such as the release of sterile moths, which by mating with fertile females the sole time these females will mate, preclude any possibility of progeny.

The agencies will also be working to improve the use and application of control materials, and to predict pest populations and damage, thereby enabling pest control specialists to more precisely determine the need for and timing of control actions. Improved aerial and ground application of control materials are under consideration which will increase effectiveness and reduce likelihood of adverse effects to beneficial insects and the environment.

This year, $9.3 million will be available for the accelerated research and development programs — $2.0 million for Douglas fir tussock moth in the West; $2.5 million for southern pine beetle in the South and Southeast; and $4.8 million for gypsy moth in the East. Activities in these coordinated programs will be carried out in cooperation with State agencies, universities and private industries.

National guidance for the programs will be provided by a program board chaired by Paul A. Vander Myde, deputy assistant secretary for Conservation, Research and Education. Assisting in coordinating the efforts will be Dr. Keith A. Shea, formerly director of Forest Insect and Disease Research for the Forest Service.

A program manager will head the work on each pest. Thomas McIntyre, who has been chief staff officer for Forest and Soil Pests of the Animal and Plant Health Inspection Service, will be in charge of the Gypsy Moth Program. The Southern Pine Beetle Program will be headed by Dr. Robert C. Thatcher, who was project leader, Southern Forest Experiment Station of the Forest Service. Kenneth H. Wright, formerly assistant director, Pacific Northwest Forest and Range Experiment Station, Forest Service, will be manager for the Douglas Fir Tussock Moth Program. □



The gypsy moth, devastator of hardwood resources in the eastern U.S., will be one target of a multi-million dollar attack launched cooperatively by four USDA agencies.

Four Ways To Fight Inflation

By JAMES A. FISCHER, The Toro Company

Editor's note: The following was presented by the author — who is director of marketing, Turf Products Division, Outdoor Power Equipment Group, The Toro Company — before the Ohio Turfgrass Conference, Dec. 5, 1974.

IS THE U.S. economic situation out of control?

—Credit is stretched thin and banks are worried.
—Rising prices are public issue No. 1.
—The petroleum situation is explosive.
—The stock market has collapsed.
—Mass starvation threatens parts of the world.
—World currencies are in disequilibrium, with the British pound and the Italian lira in serious jeopardy.
—Labor trouble is in the air.
—During a crucial period, the Federal Government was paralyzed.

The time of these headlines is not 1975, but 1920 when there were uncanny parallels with the situation today.

Am I predicting another major depression? No; inflation has been institutionalized today. Thanks to the monopolistic power of labor unions and the oligopolistic power of big corporations it's much easier to raise prices than to lower them. Also, our welfare economics make it very unreasonable to expect that the U.S. will tolerate an unemployment level of 25 percent and massive insolvency. We have many more checks in our system today.

Let's define inflation. To most people, inflation simply means rising prices for goods and services and declining buying power in cash. It means that everything one buys for cash must go up in price. In the U.S., wholesale and consumer prices have been increasing at 10 to 13 percent on an annual basis. There's no immediate relief in sight.

Here are some reasons why prices of your equipment are rising dramatically. Since Jan. 1, 1974, costs of the following commodities have increased as indicated:*

Aluminum	24%
Steel	39%
Castings	27%
Zinc	72%
Plastics	16%
Copper	45%
Rubber	24%

It is worth reflecting that today's problems aren't really unique and that the future rarely happens the way we expect. The October issue of Forbes magazine states that "the wise man expects the unexpected and keeps his powder dry." How can you as turf managers "keep your powder dry" as you look at inflation and the energy crisis?

*Lynn Townsend, chairman of the Chrysler Corporation, as quoted by the Minneapolis Tribune, Sunday, Sept. 29, 1974.

Let's look first at inflation. You as a manager can generally expect to pay higher prices in 1975 for everything you buy, including durable goods and labor. For durable goods, you can expect to wait longer for equipment than you're accustomed. Even with the current general slowdown in our economy, critical components which make up the newer types of equipment are still in short supply. You'll be expected to improve upon last year's maintenance levels with budget dollars which may not be adequate for the task.

How can you deal with this situation?

My first broad recommendations is that you become a better business manager. In the classical definition, management means the efficient allocation of the resource inputs of money, labor and equipment to produce some useful output.

First take a look at your money input. What is the source of your funding? Can you plan and present your case well enough to justify a higher budget?

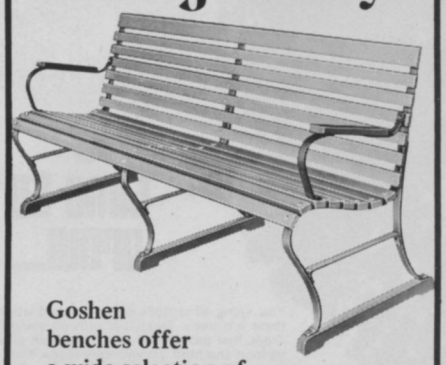
Second, take a hard look at your labor and equipment inputs and the relationship between the two. Many of you already use cost-accounting systems which tell you where your money has been spent in the past. These records may include cost journals, payroll records and service charge records. If you don't have a good system, begin to develop one.

Let me list some tips on developing a cost reporting system:

—Use uniform records for accumulating cost data.
—Have a standard report form for summarizing basic costs.
—Develop a simple method for summarizing, analyzing and presenting cost data.
—Formulate procedures for routing cost information to responsible people.

This system can be very effective as an analytical tool, a basis for projecting next year's costs and as a basis for contingency plans (e.g. a cost reduction program) should this become necessary. Since labor forms

Sitting Pretty?



Goshen benches offer a wide selection of fast selling, long lasting, outdoor seating. Choose from a variety of models and sizes. All benches are shipped knocked-down for maximum freight savings. Simple assembly instructions are included in each carton.

Inquiries from distributors and dealers are invited. Send for complete information.

Goshen Mfg. Co.
612 East Reynolds Street
Goshen, Indiana 46526

For More Details Circle (106) on Reply Card

a large part of your total input, and its price is increasing as fast or faster than that of equipment, many forward thinking turf managers are allocating more of their funds for the purchase of higher capacity, labor-saving equipment.

Many manufacturers now offer you the kinds of equipment which can give you lowered total costs of maintenance while actually improving the quality of that maintenance. In other words, instead of budgeting more new hires next year, look at the possibility of using your existing man-power more effectively by having them operate larger, faster types of maintenance equipment.

After analysis, you may well find that the purchase of new equipment can result in labor savings which can provide a very short payback period. Many businessmen feel that an investment with a payback period of one to three years is an excellent one. As a definite fringe benefit, your existing employees should have more time available for other maintenance tasks.

A third subject area which can be of importance in managing in an inflationary economy is analyzing the way you spend your budget dollars. Many leading managers are taking a hard look at leasing instead of buying outright the types of maintenance equipment they need.

Leasing has several advantages:

Leasing conserves your working capital. Only leasing gives you the opportunity to obtain equipment with so little cash outlay. With payments spread over a long period of time, equipment pays for itself as it produces. Capital remains intact. When rentals are treated as a fully tax-deductible expense, cash outgo decreases and usable capital is increased.

Leasing preserves existing credit. Your established credit lines are not affected and remain readily available. Leasing gives you an additional, non-conflicting source of credit, thereby increasing your borrowing base.

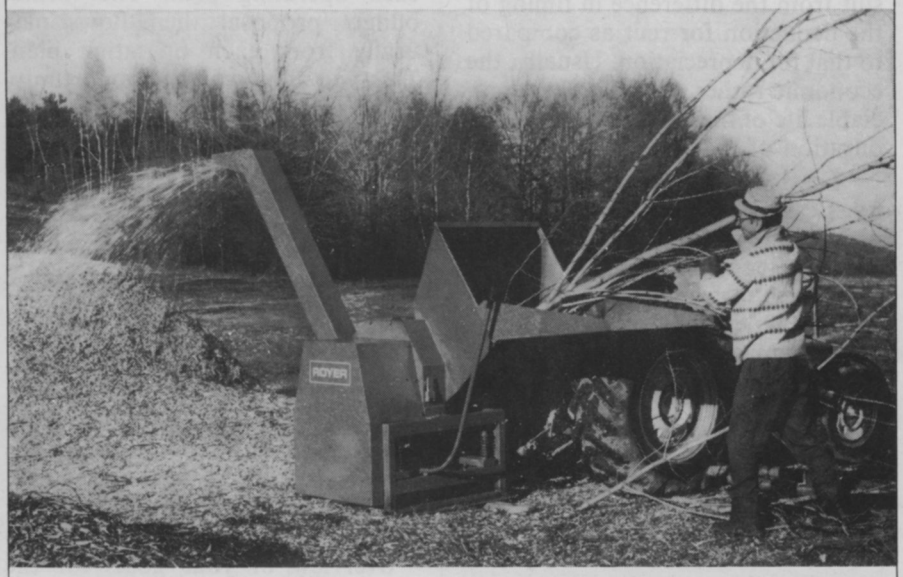
Leasing overcomes budget limitations. Minimum cash outlay plus modest payments enable you to fit the lease into the tightest of budgets. Even when your spending schedule is severely limited, leasing makes it

(continued)

The Royer Chipper.

You won't scream at the cost.

The chipper won't scream at you.



PTO three-point-hitch model 2600

...thanks to a new design concept

Royer's new "2600" Series Chippers are designed to be a lot easier on your budget and your ears. They provide an exceptionally fast, low-cost way to convert brush, branches, trimmings and stalks into chips. And, they're specifically designed to meet the needs of small commercial applications . . . are available in both PTO (three-point-hitch for tractor operation) and self-powered models.

The new chippers feature a design that combines a *rotating anvil** with a heavy-duty chipping rotor that also serves as a blower and flywheel. A unique design that delivers high-output, low-maintenance operation. And quieter operation, too. With a lot less "chipper scream" — because of an operating principle that cuts way down on rotor rpm's without cutting down on output.

Here's how it works: As material is placed in the deep-throated hopper, the rotating anvil self-feeds the material to a high-speed chipping rotor. Steel blades, projecting through slots in the rotor, then slice the material into chips for immediate discharge by the integral blower. Very simple. But very different from other chippers.

We believe you'll like everything about our new chippers. Their performance. Their lower cost. Their quieter sound. You can get complete details by requesting "2600" literature.

ROYER

ROYER FOUNDRY & MACHINE CO.
186 Pringle St., Kingston, Pa. 18704
**Patent pending*

For More Details Circle (125) on Reply Card

possible to obtain the equipment you need when you need it.

Leasing reduces the cost of inflation. The bulk of your payments are made with tomorrow's dollar which, if inflationary pressures continue, will be cheaper than today's.

Leasing may offer important tax advantages. Today, the modern concept of leasing is not based on a tax program but rather on a capital conservation program; that is, the freeing of capital so that it can be used effectively to develop profits. However, since rental payments may be deductible as a normal business expense, a tax benefit might result from the difference in timing of the deduction for rent as compared to that for depreciation. Usually, the economic rather than the tax depreciable life of the asset determines the duration of the lease.

Leasing can offer great flexibility. Leasing offers a wide variety of plans and programs geared to fit specific financing needs — long or short term, straight line or accelerated, renewable or replaceable. Leasing may well play a valuable role in your plan to cope with inflation.

My final recommendation in coping with inflation is to stand back and take a management-by-objectives look at the total tasks you plan to perform in the coming fiscal year (programs, facilities, land, maintenance level desired, and so on). Work backwards from these objectives to define the number of people and their associated skill levels which you feel will be required to perform these tasks. Evaluate your present equipment fleet for its adequacy in achieving your goals. Then utilize the first three recommendations we've discussed to form several alternative operating plans.

Lay out the costs associated with each operating plan. The formal budget proposal then flows naturally from each operating plan. This will allow you the opportunity to present several operating plans with associated budgets for approval. Those involved in the approval process can then clearly see the results which can be expected from each budgetary level.

Consider these four general recommendations I've discussed:

—Evaluate sources of funding, including Federal Revenue Sharing.

—Examine the labor equipment trade-off, utilizing a cost reporting system.

—Evaluate leasing versus purchase.

—Manage by objectives. Take an overview of your goals for the year, then work backwards to develop alternative operating plans with associated budgets.

This business management approach can be quite effective when trying to sensibly cope with inflation. □

Little Wheels bags it!

NITROFORM*
organic nitrogen

The long-lasting economical nitrogen that pampers turf with slow, sustained nourishment. Best choice for nursery stock.

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Wilmington, Delaware 19899

* Registered trademark of Hercules Incorporated

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NEWS *(from page 54)*

Stender Urges Managers To Start Safety Programs

"Eliminate those things that cause accidents; train your employees in safe work practices."

That was the advice of Assistant Secretary of Labor John Stender, head of OSHA, to the Genesee Valley Safety Conference.

Stender urged the predominantly management audience to encourage the establishment of safety programs in all segments of industry, large and small.

Stender said some 75 percent of all workplaces inspected turn up hazards. One of every nine workers suffers work-related injuries and more than 25 million work days were lost in 1972 due to on-the-job accidents.

Standard Marks 50 Years In Golf Accessory Industry

In 1975, Standard will celebrate their 50th year of producing golf course accessories. To mark this anniversary, Standard has changed their name from Standard Manufacturing Company to Standard Golf Company and added a new trademark. Their plant and offices remain at 220 East Fourth Street in Cedar Falls, Iowa.

The company actually started business in 1910 by making steel gates, wagon tongues and farm-related equipment. In 1925, Standard began making a few wooden poles, flags and steel cups for the golf industry. Three years ago, Standard sold their farm-related product division and now spends full time in the golf course accessory field.

Gingery Appointed Member Of Mailers Advisory Group

Lee E. Gingery, vice president in charge of sales for the Henry Field Seed and Nursery Co., Shenandoah, Iowa, was recently appointed by Postmaster General Klassen to represent the American Association of Nurserymen and the Mailorder Association of Nurserymen on the Mailers' Technical Advisory Committee.

This committee, comprised of individuals from the private sector, meets quarterly in Washington, D.C., to advise the Postmaster General with respect to the improvement and expansion of postal services.

Gingery is immediate past president of the Mailorder Association of Nurserymen, and takes an active interest in the American Association of Nurserymen as well as the Direct Mail Advertising Association.

He joined Henry Field's in 1960 as advertising manager and became a vice president in 1965. In 1969 he was named to the board of directors of that firm.

It's spring.

For effective control of leaf spot, use TERSAN® LSR.

TURF FUNGICIDE

Start with TERSAN LSR turf fungicide on tees, fairways and greens in early spring to stop leaf spot activity before it becomes a problem.

Leaf spot is usually most active during periods of cool, wet, overcast weather. Early applications of soluble nitrogen also encourages disease activity.

TERSAN LSR will also protect against rust and large brown patch before they have the opportunity to damage your turf. If stripe smut is a problem, use TERSAN 1991.

Combine this first step with other sound turf-management decisions and you'll have tournament-ready turf this spring.

Stay with the economical TERSAN 1-2-3 Program and you'll be in complete control of major turf diseases on all common turf grasses all season long.

TERSAN 1•2•3
DISEASE CONTROL PROGRAM

DUPONT

With any chemical, follow labeling instructions and warnings carefully.

Ohio Turfgrass Conference Report

'Neither Sleet Nor Snow . . .'

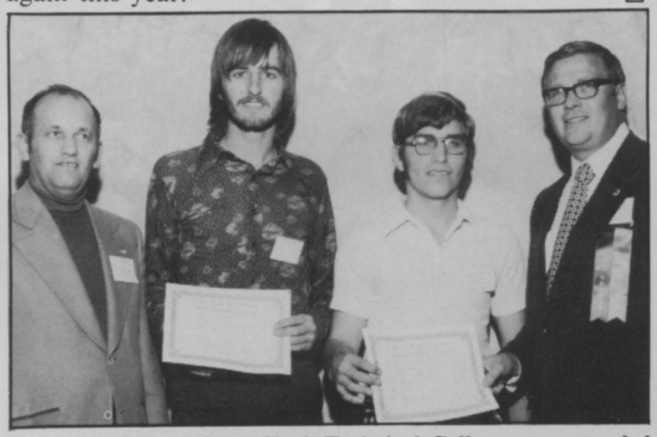
WINTER STORMS played a part in the recent Ohio Turfgrass Foundation (OTF) Conference and Show but in no way diminished the value for the more than 900 who were able to attend.

John S. McCoy (left) was honored as the Ohio Turfgrass Foundation's "Man-of-the-Year" at the annual banquet. McCoy has been active for many years in golf course construction and maintenance. Presenting the award is OTF Past President Paul Morgan.

Snow ranging up to 27 inches deep in northern Ohio closed highways and limited attendance for several hundred in Michigan, Pennsylvania, Indiana and northern Ohio who usually make this major regional event. Yet the show pulled heavily from central and southern Ohio and Kentucky.

Paul Mechling, newly elected president for 1975, expressed the general Foundation board opinion that the large attendance in the face of adverse weather conditions indicated the strength of the show-conference combination.

A total of 56 exhibits utilized more than 100 booth spaces at the Columbus, Ohio, site and the formal program was directed to specific areas of the industry such as the custom applicator, cemetery maintenance, athletic fields, school grounds and chemical and equipment problems. Plans are to continue this type program again this year. □



Two turf students from Clark Technical College were awarded OTF scholarships at the Ohio Turfgrass Conference and Show. Adviser Dalton Deal (left) observes while students Gary Dilbert and Don Smith receive their awards, presented by OTF Trustee Mac Gilley.

President Ron Smith (right) receives the President's Plaque for his outstanding service to the Ohio Turfgrass Foundation. The newly elected president for 1975, Paul Mechling of Sylvania Country Club, made the presentation.

THIS POWER MACHINE AERATES AND PRECISION-DISPENSES THREE TURF MATERIALS SIMULTANEOUSLY.

seed, fertilizer, controls, etc.

If you service lawns, or plan to, we have a complete "automated lawn service" management, training and marketing program available, **free** with your LAWN MAKER combine. This machine is also excellent for Greens.

Lawn Maker

57 Verdi St., Farmingdale, N.Y. 11735

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LEARN PROFESSIONAL LANDSCAPING

We prepare you to cash in on countless money-making opportunities in modern landscaping and show you how, by easy steps, to start your own business part or full time. You will learn latest developments in Modern Landscaping, including creative design—plant propagation—revolutionary new methods of growing in manufactured soils—practical soil testing—growth regulators—the low down on fertilizers—easy ways of plant identification—estimating and contracting. My unique home study course features easy to understand assignments with careful detailed illustrations. Certificate Awarded. May. I send **FREE**, and without obligation, my informative **BOOKLET?**

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2251 Barry Avenue Los Angeles, Ca 90064

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◀ For More Details On Preceding Page Circle (126) On Reply Card

NUTSEDGE *(from page 52)*
inch height suggesting that the nutsedge is well adapted to a close mowing regime.

Initially, fertilization appeared to enhance nutsedge growth, but this trend was reversed by the end of four months. This was probably due to the response of Kentucky bluegrass to fertilization during late summer. Thus, the success of nutsedge as a weed in turf is apparently associated with conditions that reduce the competition from Kentucky bluegrass.

Bentazon, cyperquat and MAMA were applied for controlling yellow nutsedge on a golf course tee of Kentucky bluegrass maintained at ¾ inch cutting height. The herbicides were applied at various rates. Repeat applications and the addition of surfactant to the spray solution were also included in the test. Control estimates were made approximately three and seven weeks after initial treatment. Plugs were extracted from each plot and nutsedge tubers were separated and counted.

Nutsedge control was best in plots receiving two applications of any of the three herbicides under evaluation. Where effective control of the nutsedge shoots was observed, tuber development was also substantially reduced. Some temporary discoloration was observed on the MAMA treated plots while no injury was evident from the bentazon or cyperquat treatments.

There was substantial variability among replications that was associated with differences in irrigation coverage. Generally better control was observed in the more intensively irrigated plots.

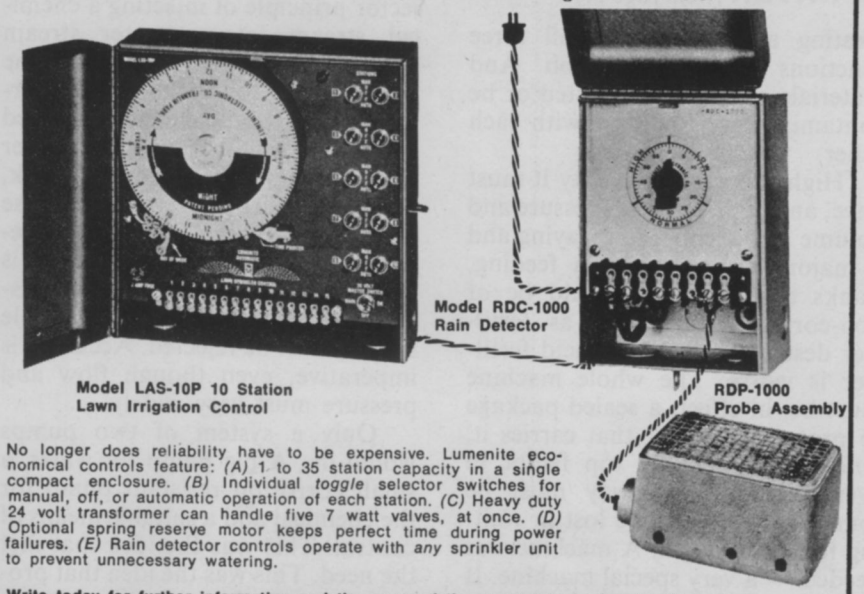
Based on this observation and subsequent greenhouse tests, it was concluded that frequent irrigation for a period of several weeks prior to herbicide treatment enhances control of yellow nutsedge with herbicides. □

Coming Next Month . . .

Complete results of WTT's exclusive Golf Course Market Study.

FINALLY! AT LAST! IT'S HAPPENED!

Lumenite, with 35 years experience in the timing control and liquid sensing fields, offers a truly economical, deluxe, line of lawn irrigation controls.



No longer does reliability have to be expensive. Lumenite economical controls feature: *(A)* 1 to 35 station capacity in a single compact enclosure. *(B)* Individual *toggle* selector switches for manual, off, or automatic operation of each station. *(C)* Heavy duty 24 volt transformer can handle five 7 watt valves, at once. *(D)* Optional spring reserve motor keeps perfect time during power failures. *(E)* Rain detector controls operate with *any* sprinkler unit to prevent unnecessary watering.

Write today for further information and the name of the nearest Lumenite distributor.*

LUMENITE
ELECTRONIC COMPANY
DEPT. I.C.
2331 NORTH 17TH AVE., FRANKLIN PARK, ILL. 60131
PHONE (312) 455-1450
*Protected areas are still open for qualified distributors.

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Root-App™...A New Subsurface Tree Feeding System

A new way to increase your tree care business... With Root-App, one man can feed more trees per day with less effort than any other method.

Root-App does the work, not the operator. Stones, hard pans, clay or frozen ground. . .no problem. Root-App is. . .portable, simple to operate and it's automatic. Above all, it's the fastest root feeding system available anywhere. One man can feed a 10" diameter tree in less than 3 minutes. Concentrated liquid fertilizer is injected as deep as 16 inches with no fuss and no mess. Less holes are required with Root-App as the high pressure radial injection penetrates more soil area.

Send for more information now. . .

Applied Imagination
Belle Mead, New Jersey 08502
609-448-1004

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SPRAYER *(from page 44)*

treating and performing all three functions on the same job. And materials must not be wasted or be contaminated by contact with each other.

High pressure capability it must have, and high volume. Pressure and volume are essential in spraying and a major key to profit in feeding. Tanks and machine should be of non-corrosive materials, as fertilizer destroys metal, and acid fertilizer is worse. The whole machine must be, in effect, a sealed package to protect the truck that carries it. And since time is a top factor in every operation, a way must be found to save the time lost in waiting for tanks to fill. A machine was needed — a very special machine. It must be efficient and highly versatile, long lasting, and time saving, a machine designed for this special use.

Practical limitations of size and weight made it desirable to get big capacity from small tanks. This pointed to an injector or proportioning system. The use of the injector principle of injecting a chemical stream into a water stream would also almost eliminate the waiting time for tanks to fill. Formula tanks would be quickly filled because of small size, and the water would be pumped from a tank, floatfilled through a water hose from the customer's faucet. Because venturi, or siphon injection is accurate only when flow and pressure remain constant, this simple system must be rejected. Accuracy is imperative, even though flow and pressure must vary widely.

Only a system of two pumps would do. A big pump for water, a small corrosion resistant pump for the chemical and a suitable means of control. This was the idea that met the need. This was the idea that produced a machine making horticultural service convenient and practical.

The machine that emerged did not come into the world in its fully developed state. Rather, it came as any infant comes, in need of development through years of growing up. Its new control system, a vast improvement over the original, is now four years old and new patents have just been applied for on recent improvements. Its metering system is now completely new for the fourth time in fifteen years. Metering is, of course, a necessity in feeding to give the operator an indication of gallonage. The multiple tanks have been fiberglass for many years, and for almost eleven years now, the entire system has been housed in an all fiberglass van protecting the carrying truck from corrosion.

These machines spray at eight hundred pounds pressure. Switching between formulas, and between spraying and feeding is done in an instant. One ton trucks carry them, yet their ten formula tanks have a total capacity of more than one thousand gallons. More than two thousand gallons of fluid in tree feeding or lawn treating is a good day's work. All materials for normal needs are carried on the truck, and all production is by the operator with no helper. □

UNIROYAL

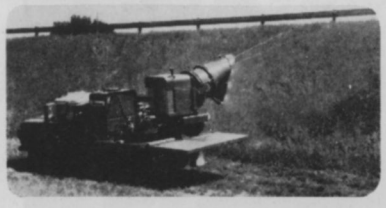
SLO-GRO®...now more than ever the key to lower mowing and pruning costs.

If rising labor costs are keeping you from doing the kind of mowing and pruning job you know should be done, maybe the answer you're looking for is Slo-Gro.

Slo-Gro is a unique chemical growth retardant that economically controls the growth of trees, grass, shrubs and ivy. In tough-to-control areas, Slo-Gro can usually do the job better, and at less expense than mechanical methods.

It's fast, systemic, safe, and produces no persistent residue. For complete details write: Uniroyal Chemical, Division of Uniroyal, Inc., Naugatuck, CT 06770.

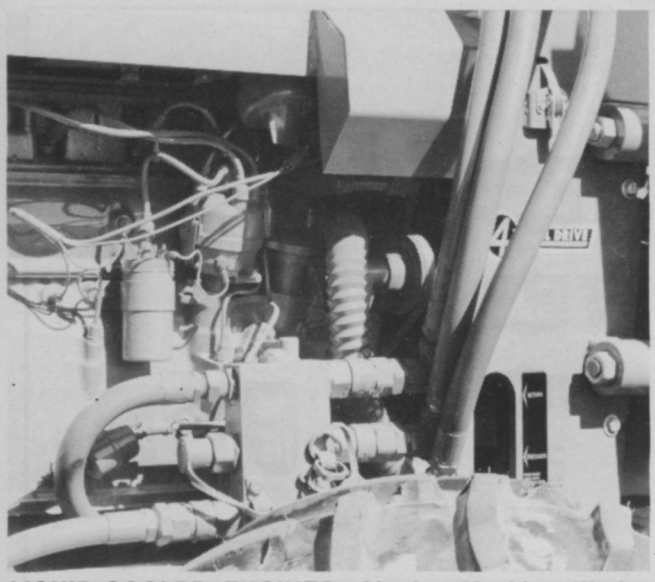
As with any growth regulant, always follow instructions on the label.



Roadside Grass Control. Slo-Gro is recommended for use on all "commercial" turf areas that require regular maintenance, but are difficult to mow. Maintenance situations like highway medians, airfields, steep embankments, ditches, and grassed areas around fences and guard rails.

Growth Control on Trees. Slo-Gro inhibits tree growth by stopping the terminal growth of woody plants. Primary applications include control of tree size under power lines, along streets, or wherever excessive foliage is a problem.

Golf Course Maintenance. While Slo-Gro is not recommended for general use on fine grass areas such as residential or commercial lawns, it has been used extensively on golf course roughs. It can also be used in conjunction with herbicides wherever weed control is required.

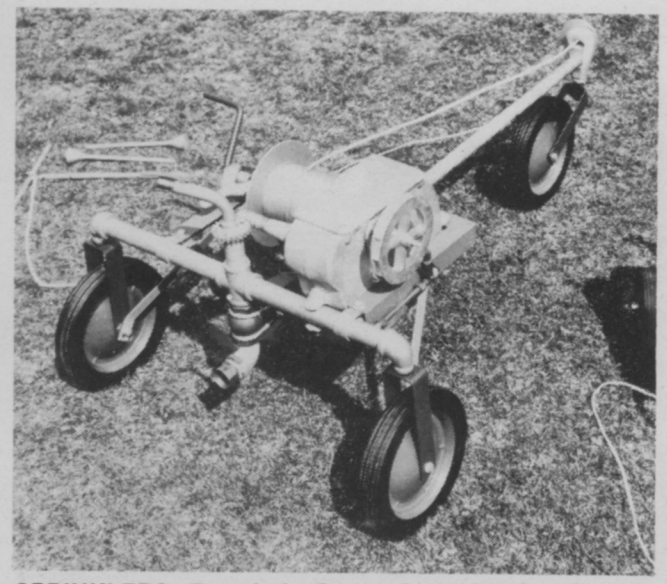


LIQUID-COOLED ENGINES: Charles Machine Works, Inc., Perry, Okla.

Two additional power plants are available as options for the Ditch Witch R40: liquid-cooled gasoline and diesel 192 cubic-inch engines. Both produce 40-plus hp at 2,000 rpm, and are said to lower maintenance requirements and noise level. Basic R40 vehicle uses interchangeable socket-mount work modules, including modules for trenching, restoration, vibratory plowing, backhoe work, boring, a hydraulic breaker and the Ditch Witch Combo, a combination tool which includes an offset digging assembly and vibratory plow. For more details, circle (701) on the reply card.

SNAP-CUT TREE PRUNER: Seymour Smith & Sons, Inc., Oakville, Conn.

No. 33AT Snap-Cut tree pruner features Teflon-S coated pruning blade and saw blade. Pruners also have dual action pulley system providing compound cutting action. Telescoping aluminum poles adjust to any length between six and 12 feet. A simple, foolproof cam-lock tightens or loosens with a quarter turn of the poles. Pruner cuts branches up to 1¼ inches in diameter. Curved 16-inch detachable saw has teeth especially set for cutting greenwood and large limbs. Teflon-coated blades are said to not gum up, stick, bind nor rust. For more details, circle (702) on the reply card.



SPRINKLERS: Travelrain Power Sprinkler Co., Beverly Hills, Calif.

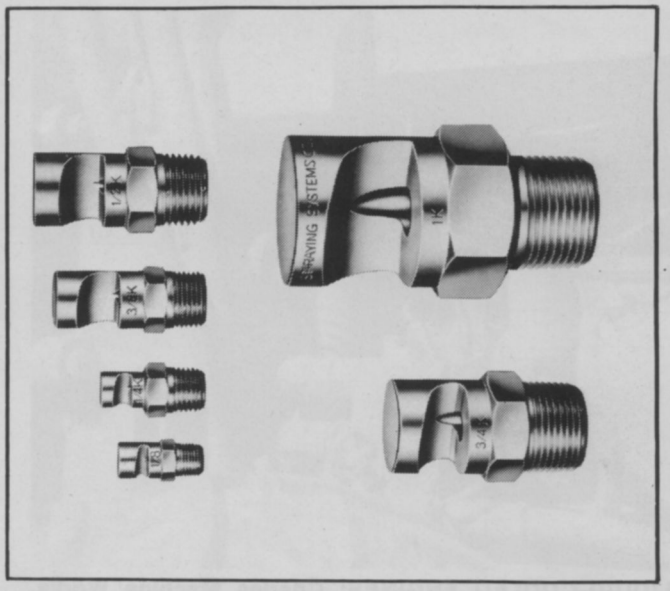
Four self-propelled sprinkler models are offered by Travelrain Power Sprinkler Co. — heavy-duty, standard, cub special and cub. Heavy Duty model waters an area of 100 by 600 feet in one setting, and features an oil-tight enclosed gearbox. These water-turbine powered sprinklers pull themselves along through winding up a steel cable, and shut off automatically. All models have semi-pneumatic tires and positive shut-off, and are said to travel straight or irregular paths including steep hills, rough ground and tall grass. For more details, circle (703) on the reply card.

PRO RAKE: York Rakes, Unadilla, N.Y.

"Professional" Model PRO Rake is designed for tractors equipped with a standard three-point hitch and extra hydraulic valve control package. Rake angle is automatically adjusted using hydraulic power from the tractor. Large-diameter caster wheels equipped with pneumatic tires are first adjusted manually to desired working rake depth. Thereafter, as driver changes rake angle, caster wheels adjust automatically to new working angle and driver remains in his seat. Maximum working width of rake unit is 8 feet. Minimum width, fully angled right or left, is 6 feet, 10 inches. Rake has 48 teeth of heat-treated alloy steel, set one inch apart. For more details, circle (704) on the reply card.

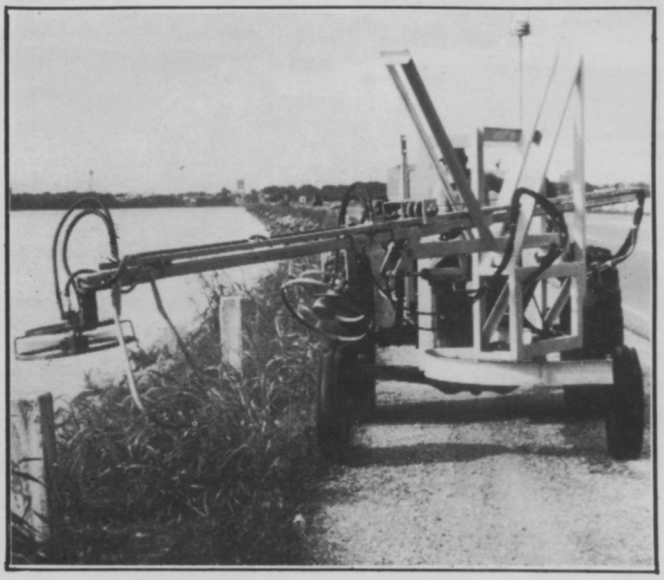
S-60, S-72 ROTARY MOWERS: BMB Company, Inc., Holton, Kan.

BMB Company has announced the addition of the Suburban 60 and 72 (60 and 72 inch cutting widths) to their line of rotary mowers. Belt driven for quiet operation, the mowers consist of three blades rotating at very high rpm, and are said to ensure a neat, "finished" appearance. Cutting height of the mowers ranges from one to six inches, depending on the drawbar lift of the tractor. The mowers are designed mainly for use with Category I tractors. S-60 weighs 570 lbs., and sells for $642. S-72, weighing approximately 610 lbs., sells for $698. For more details, circle (705) on the reply card.



FLOODJET NOZZLES: Spraying Systems Co., Wheaton, Ill.

Spraying Systems Co. has expanded its line of wide angle FloodJet Flat Spray Nozzles to provide complete size selection from ⅛ inch to 1 inch NPT inlet connection sizes. Nozzle pipe sizes are also available in a range of capacities from the ⅛K.50 with a capacity of .70 gallons per acre to the 1K-450 with a capacity of 315 gallons per acre — both operating at 20 psi and a tractor speed of 15 mph. FloodJet Nozzles are supplied in choice of brass or stainless steel for spraying liquid fertilizers and other chemicals. For more details, circle (706) on the reply card.



SPAN-SPRAY: Ring Around Products, Inc., Montgomery, Ala.

Span-Spray herbicide unit is designed for weed and grass control along ditches, embankments, culverts and other hard-to-reach areas. Mounting on front of any tractor, boom reaches out to cover up to 25 ft. from tractor centerline. All mechanics used are hydraulic. Will operate 3 hours per tank filling. Boom, extending to right of tractor, can be moved while tractor is in use and in motion. Will go out to 18 ft. horizontally, will raise to 70 degree angle or lower to nearly 8 ft. below road level. Boom locks forward in line with tractor for one-lane road travel. For more details, circle (707) on the reply card.

REN-O-THIN POWER RAKE: OMC-Lincoln, Neb.

Two new power rake models (4 hp and 7 hp) with optional thatch catcher, are introduced by Ryan turf care equipment. Both models have two 8-in. front wheels, two 10-in. rear wheels and floating front axle, which are said to enable units to follow land contours better. Features include: reversible handle for upmilling, enabling operator to change reel's direction to insure more effective thatch removal; spring loaded deadman clutch control on handle bar to stop reel; micrometer screw adjustment on front axle to control reel height adjustment in small increments up to 1⅞ in. Power rakes list from $330 to $395. For more details, circle (708) on the reply card.

Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

Rates: All classifications 50¢ per word. Box number, $1. All classified ads must be received by Publisher the 10th of the month preceding publication date and be accompanied by cash or money order covering full payment.

FOR SALE

ARPS stump cutter teeth, top quality and best price in U.S.A., D. J. Andrews, Inc., 17 Silver St., Rochester, New York 14611. Call 716 235-1230.

USED EQUIPMENT

1968 FORD dump with chip box, $6500.00; 1966 Vermeer 1560 stump cutter, $3500.00; 1970 F-600 Ford 52' Hi-Ranger with chip box, $18.500.00; 1971 Woodchuck brush chipper, 4 cylinder, 12", $2900.00; 1967 Chevy stake with 1968 John Bean 35GPM sprayer, $6000.00; 1972 Fleco 26" tree shear, $4500.00. Jim Green, Ohio Chipper & Equipment Company, Div. of Osborne Brothers Tree Service, Mentor, Ohio 216 951-4355.

MODEL 524-100 Jacobsen aero-blade seeder. Less than 50 hours use, $750.00. Model MC-5C Hahn vertifier with core catcher. Less than 75 hours use, $825.00. Professional Turf Corp., Box 2175, Gaithersburg, Maryland 20760. Phone 301 948-5252.

FOR SALE — 301T Rotomist, less than 300 hours, excellent, new bearings, shroud, tires, battery packings, warranty. Call 315 685-3756.

VERMEER STUMP CUTTER, model 10, excellent condition, new engine, $3,500.00, Shearer Tree Surgeons, 300 Basin Rd., Trenton, New Jersey 08619. Phone 609 924-2800.

STUMP grinder log splitters, chippers, sprayers, bucket trucks, all reconditioned; let us know your needs, Essco, 5620 Old Sunrise Highway, Masspequa, New York 11758. Phone 516 799-7619.

SEEDS

SOD QUALITY Merion Seed for discriminating growers. Fylking, Delta, Park, Newport, Nugget, Adelphi, Cheri, Glade and Baron bluegrasses as well as fine fescues. Also Manhattan fine leaved rye grass. We will custom mix to your specifications. Michigan State Seed Co., Div. of Vaughan-Jacklin Corp., Grand Ledge, Michigan 48837. Phone No. 517 627-2164.

HELP WANTED

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc., and you have our story. D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

POSITION WANTED

ENTOMOLOGIST (BS 1968) 3½ years insecticide application experience seeking position in chemical or Agricultural equipment sales. Will consider related employment. Prefer east coast. Write Dave Meissner, P.O. Box 158, W. Falmounth, Mass. 02574.

GROUNDSMEN, GARDENERS, TREE TRIMMERS: Two year vocational graduates in Golf Course Management, Grounds Maintenance and Arboriculture desire positions with private and public horticultural services departments. Willing to locate nationally. For additional information, contact E. L. Viramontes, Instructor, Landscape Career Center, Box 191, Anoka, Minn. 55303 — 612 427-1586.

HORTICULTURIST: Seeking managerial or sales position, diversified experience, adaptable, challenges welcomed. Reply Box 128, Weeds, Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

EDUCATION-BOOKS

AUTOMATIC IRRIGATION COURSES For both superintendent and contractors. Independent coverage of theory and practice of modern irrigation with individual lessons on todays equipment, materials, installations, estimations, specifications. Straightforward practical question and answers on each lesson. Final exam and completion certificate. Send for free outlines of both courses. Larson Company, P.O. Box 4453, Santa Barbara, Calif. 93103.

MISCELLANEOUS

FOR RENT OR LEASE

By day, week, or month, for spring spraying with one of our employees, 1973 truck, with 600-gallon tank, 45 GPM pump, 1—500-ft. ½" hose on electric reel, 1—100-ft. ¾" hose with 12-ft. tree gun for tall trees. This unit isn't booked for this spring — we need to put it to work.

PARSONS TREE
4600 Main—Parsons, Kansas 67357
Phone: 316/421-0868

TREE APPRAISALS, Surveys, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact: Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

PUGET SOUND TREE SERVICE, INC., 1111 No. 98th St., Seattle, Washington 98103, Stump Chipper Teeth and pockets for the Northwest. Phone 206 523-2240.

SEWAGE *(from page 43)*

320 ppm lead. These levels are low compared with most other metropolitan areas, and can be further reduced by eliminating industrial effluents of these heavy metals.

Pathogen Destruction

Numerous studies have shown that temperatures generated in properly conducted composting processes are capable of killing the cysts of amoebic dysentery-causing protozoans, the ova of parasitic worms and most pathogenic bacteria. Killing temperatures are not reached, however, throughout all parts of the compost at any one time. All the material will be eventually subjected to the higher interior temperatures when the compost windrows are turned a number of times during the course of several weeks. Salmonellosis (food poisoning) is capable of growing in the cooler parts of the compost. When the compost is turned, the sterile interior materials become inoculated.

Survival of these organisms in sufficient quantities to constitute a health hazard seems unlikely for two reasons: (1) as composting continues, the material appears to become increasingly less capable of supporting their growth, and (2) storage for 30 days in the largest compost piles, wherein heating continues, should reduce their numbers to insignificant quantities. □

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Trimmings

An entomology seminar scheduled for March 3, 4, and 5 in Denver, Colorado was recently finalized by the International Pesticide Applicators Assoc. The seminar consists of 21 hours of classroom training and testing headed by Dr. Dean Jamieson, vector control specialist, Santa Clara City Health Department. Certificates of completion will be issued to each successful participant. Interested persons should contact Dave Dixon, 620 S. Dallia St., Denver, Colo. 80222, telephone 303-399-2301.

Ah, for the days when a dollar was worth a dollar said the residents of West Hollywood, Calif. when they saw the bill for a recent street tree planting project. What began as a modest project ended up costing Los Angeles County taxpayers about $180,000 or $1,144.51 per tree. The money bought 157 magnolia, palm and laurel trees. Sidewalks were torn up, subsurface pipelines and wiring systems had to be dealt with and an underground irrigation system was installed for the trees. Individual cost of the trees ranged between $90 and $138 each, but an administrative decision to give them each an automatic watering system increased the cost of each tree tenfold. The original estimate for the watering system was $18,000 — a 1971 estimate. Inflation and numerous problems encountered with underground utility pipes, vaults and wiring systems kept multiplying the cost.

Hormone weed killers are about to get a boost in England as the agricultural division of Burts and Harvey initiates an expansion program aimed at doubling production of monochlopropionic acid. The acid is vital to the production of hormone weed killers. Company officials estimate a large percentage of the increased production will be exported in the form of technical material for final formulation in overseas countries.

Helping nature with science are researchers looking into synthetic substitutes for the pyrethrum plant, considered one of the world's safest and least toxic insecticides to man and animals. The new synthesized substitutes, while more effective against target insects, may be even less hazardous to people and animals than the natural product. Research conducted by USDA Agricultural Research Service (ARS) has proven the insecticide lethal to a wide range of insect pests.

It isn't nice to fool mother nature but researchers at Weyerhauser Co. are out to show that they can do her one better in the tree growing business. "Skipping the seed" and growing trees right from living cells is just one of the possibilities being explored. "Tissue culture will be the next big breakthrough in forestry," said Jess D. Daniels, a forest geneticist at Weyerhauser's Forest Research Center, Centralia, Wa. "Commercial growing of trees with tissue culture is only about five years away." Other ideas under investigation include suspension cultures, a batch of tissue that grows like yeast, and taking live cells from a seed to grow trees. "We can get 20 to 40 seedlings from one seed by doing this," said Jack Winjum, a forest regeneration research manager. Sex and the single tree, as one scientist described the research, holds the promise of major forestry breakthrough.

1975 Golf Course Market Study

There's little doubt that the cost of materials and labor is climbing at an alarming rate. And this is as true for the maintenance budget of the golf course as it is for everything else.

The 1975 Golf Course Market Study just completed by WEEDS TREES AND TURF shows just how much this striking trend in higher costs and larger budgets has progressed.

Net growth in dollar expenditures for the 18-hole golf course, for example, has increased more than 67 percent since 1969. Average budget for the 18-hole course is over $96,000. This figure compared to the 1969 results of $65,000 indicates an increase of $31,000.

Tabulated returns from the course superintendents fell into three categories of courses; private, public and semi-private — the largest percentage, 67 percent, falling into the 18-hole category. This size course, in any of the three categories, showed the greatest percentage gain in gross dollar outlay for chemicals, fertilizer, equipment and labor.

Broken down, the new average budget for an 18-hole course, includes yearly outlays of $4,440 for chemicals, $6,323 for fertilizer, $57,155 for labor and $10,279 for equipment. Compared to 1969 results of $3,000 for chemicals, $4,700 for fertilizer, $6,862 for equipment and $32,200 for labor, the new budgets represent a substantial increase in each of the market areas.

A chart of yearly budgets for all size courses shows 20 percent of the respondents operating within the $25,000 - $34,900 category, 18 percent within $100,000 - $124,000 and 16 percent in the $75,000 - $99,900 range. The majority of the superintendents spent their yearly budgets operating 9- and 18-hole courses but others ranged to 81 holes.

Most owned items on the list of equipment include aerators, chemical applicators, mowers, dethatchers, chain saws and tractors. The superintendents indicated that flail, gang, reel, rotary and sickle bar mowers headed their equipment list at a rate of 12.3 mowers each. Aerators represented 55 percent ownership while gasoline carts edged out electric carts by a slim margin. However, over 50 percent of the respondents indicated owning either type of cart.

The biggest ticket item on the chemical and fertilizer budget is fertilizer at $5,900, followed by fungicides, both contact and systemic, for a total of $3,900 and preemergent crabgrass herbicides at $1,200. The new averages represent at least 100 percent increases from the 1969 survey in all three categories. □

The very latest in go carts.

Just what you need for carting, for hauling, for getting personnel from one work area to another.

Ray McMicken (with B. Hayman Company in Santa Fe Springs, California) is one of us 74 Jacobsen Distributors who can tell you all about these new hauling vehicles.

Take the big, one-ton capacity UV4 shown up front. It lets you haul dirt, sand, fertilizers or chemicals to anywhere you want to put it. And that means anywhere because it's an articulated 4-wheel drive vehicle.

Also, it features a hydraulic dump, a rugged torque converter transmission with two forward and one reverse speed including 20 MPH transport, and powerful hydraulic brakes. It even has an hour meter, along with other things you should know about, like top and bottom tailgate hinges.

For smaller loads like tools, equipment and personnel, the Cruiser 2 has a payload of 1/2 ton. It seats two and goes between work areas as fast as 12.5 MPH.

It also has a torque converter transmission with two forward and one reverse speed, hydraulic brakes, plus a ground-hugging design for safety.

Ask your Jacobsen Distributor for a demonstration at your place. He'll show you vehicles that have real get-up-and-go.

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Your Jacobsen Distributors.

Before we sell it, we buy it.

For the name of the distributor near you, write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403.

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Anselme Bourassa, golf course owner in Canada, talks about baron Kentucky Bluegrass . . .

U.S. Plant Patent #3186 Dwarf Variety

"We used baron on all our tees and fairways when we built our front nine holes. And baron performed so well that we're using it for the back nine too!"

"With our cold climate and short playing season, it's important to select a grass that'll come up fast. We planted a Baron Kentucky Bluegrass mixture on all our tees and fairways and only one month after seeding, I saw green everywhere."

"Baron comes up fast. We seeded the course in late August 1973. The fairways were ready for play by May 1974. We could have opened the course then except the greens weren't ready until mid-June."

"And Baron stays green until the first snowfall. Last winter was bad. . .lots of rain and thick ice. But as soon as the ice and snow were gone, Baron came up green and beautiful. We didn't have any winter kill. I told my neighbors they should have overseeded with Baron this fall."

"We usually cut to 1¼ inches and Baron stays green and very nice. We found this to be true even when we cut to ¾ inch. We didn't have any problems with diseases, not a single one."

Anselme Bourassa is the owner of Les Vieilles Forges Club de Golf, Trois-Rivieres, Quebec, Canada.
Jean Pierre Masse is a turf consultant and landscape contractor with Masse & Fils Co., Cap de la Madeleine, Quebec, Canada.

And here's what Jean Pierre Masse landscape contractor and turf consultant for the golf course has to say about baron...

"There's no question that Baron can adapt itself to inferior growing conditions. All this land was woods before we came through with a bulldozer. See this sand? That's what's under the top layer of soil in the fairways. This soil is extremely sandy, very acidic and obviously very porous. But regardless, Baron did a fine job."

There's not much more we can add except that Lofts Pedigreed Seed Company or any authorized distributor is nearby wherever you grow quality turf.

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